



Strategic Partnerships in Higher Education, October 22, 2019
Cynthia Proctor, Dir. Communication & Academic Policy Development, SUNY System

Agenda

- What are Micro-Credentials (MCs)?
- SUNY's Policy
- In Your Own Words
- SUNY/National Examples of Business Partnerships Around MCs
- Strategic Communications Strategies
 - Elevator Pitches
 - Pitch Decks
 - Strategic Communications Plans

What are Micro-Credentials?

- Smaller than a minor, certificate, or degree
- Recognize that specific skills and competencies have been mastered
- Often comprised of select courses pulled from existing registered degree programs or established non-credit programs. For example:
 - Three or four for-credit courses;
 - Two for-credit courses plus an applied learning experience;
 - A full degree program broken into 4-5 micro-credentials;
 - Several non-credit courses (*that have been evaluated for academic credit)

Closing the Skills Gap!!

What are Micro-Credentials?

- Online, in the classroom, blended
- Credit, Non-Credit to Credit, Non-Credit
- Often Represented by a Digital Badge
 - Demonstrated Skills & Competencies
 - Learning outcomes & assessments
 - Alignment to Industry Standards
 - Evidence of Student Work



Closing

the Skills

Gap!!

Clinical Pharmacy Research

Issued by University at Buffalo

Offered by the School of Pharmacy and Pharmaceutical Sciences, this micro-credential prepares leaders in pharmacy clinical and translational research. The earner of this badge is able to ask critical clinical questions; formulate a hypothesis; write a research proposal; and conduct research under the guidance of a faculty mentor.

Demonstrated Skills

Critical Thinking/Problem Solving

Research

Earning Criteria

Successful completion of the following courses 551:
 Clinical Research Methods; PHM 552: Clinical Research
 2; PHM 831: Clinical Research Elective; Research
 presentation

Why Micro-Credentials Now?

New Yorkers Need Credentials

"Nearly 6 million New Yorkers age 25 and over have their high school diploma (or equivalency) and have not earned a college degree."

Source: U.S. Census 2013-2017 American Community Survey 5-Year Estimates

New Yorkers Need Credentials

"Workers with a high school degree or less are four times as likely as those with a bachelor's degree to be displaced by automation."

Source: The Future of Work in America, McKinsey Global Institute, July 2019

Changing Student Population: More Students Over Age 35

Closing the Skills Gap

"60% of executives and hiring managers think most college grads ready for entry-level positions; only 33% of execs and 25% of hiring managers feel grads have the skills or knowledge to advance."

Source: AACU/ Newman's Own Foundation, May 2018

The Demand for Life-Long Learning

"The concept of a 'career' is being shaken to its core, driving companies toward 'always-on' learning experiences that allow employees to build skills quickly, easily, and on their own terms."

Source: Rewriting the Rules for the Digital Age, 2017 Deloitte Global Human Capital Trends

SUNY Micro-Credential Policy

- ✓ Adopted by the SUNY Trustees Jan. 2018
- ✓ Endorsed the Work of a U-Wide Task Force
- ✓ Applies to All SUNY Campuses





ACADEMIC AFFAIRS / MICROCREDENTIALS

Micro-Credentials at SUNY

Follow SUNY's Progress as it Leads the Way in High-Quality Micro-Credentials

What are Micro-Credentials?

At the most basic level, micro-credentials verify, validate, and attest that specific skills and/or competencies have been achieved. They differ from traditional degrees and certificates in that they are generally offered in shorter or more flexible timespans and tend to be more narrowly focused. Micro-credentials can be offered online, in the classroom, or via a hybrid of both.

Why is SUNY Interested in Micro-Credentials?

It's all about SUNY's commitment to each student's success and the value of individualized learning. The potential uses for micro-credentials are far-reaching: offered within an existing degree program, micro-credentials can motivate current students to persist; as an add-on to an existing degree program, micro-credentials allow students to distinguish themselves in a competitive marketplace through mastery of skills complementary to their chosen field of study; for adult learners looking to start or return to college, micro-credentials can be used to break a degree program down into smaller sections of curriculum that stack toward a degree; and, micro-credentials can be terrific tools to support life-long learning and professional development. One of the most common ways micro-credentials are recognized is via a digital badge that can actually link prospective employers to examples of student

SUNY's Commitment to Academic Quality

SUNY's micro-credential policy was informed by a University-wide Micro-Credentialing Task



SUNY Policy Framework

A New Tools to Serve Business, Industry, & Community Partners; No Matter Where They May Fall on Your Partnership Continuum

Key Components of Policy Framework

- 1. SUNY-Specific Definition & Taxonomy
- 2. Guiding Principles for Micro-Credential Development
- 3. Process for Local Approval via Faculty Governance
- 4. Collaborative Development
- 5. Transparency & Effective Communication
- 6. Allows for Multiple Micro-Credential Types

1. SUNY-Specific Definition

SUNY Micro-Credentials:

- Verify Specific Skills & Competencies Mastered (learning outcomes, assessments, examples of student work)
- Are Endorsed by the Issuing Campus (dept., provost, president sign-off)
- Have Been Developed through Establish Faculty
 Governance Processes
- 4 Are Meaningful and High Quality (strategic, portable & stackable)

2. Guiding Principles for MC Development

- Academic Quality is Paramount
- Faculty Governance Participation Required
 - ✓ Consistent with Campus Mission
 - ✓ Informed by Market Data
 - ✓ Aligned with Field/Industry Standards
 - ✓ Flexible and Innovative
 - ✓ Maximize Partnerships
- Portable and Stackable



SUNY MICRO-CREDENTIAL POLICY FRAMEWORK

3, Local Approval, Local Governance Process

Academic
Affairs +
Continuing Ed /
Workforce Dev
as Partners

4. Collaborative Development

Engage Business Partners!

5. Transparency & Effective Communication

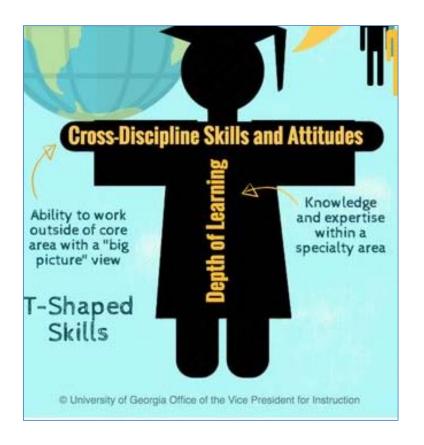


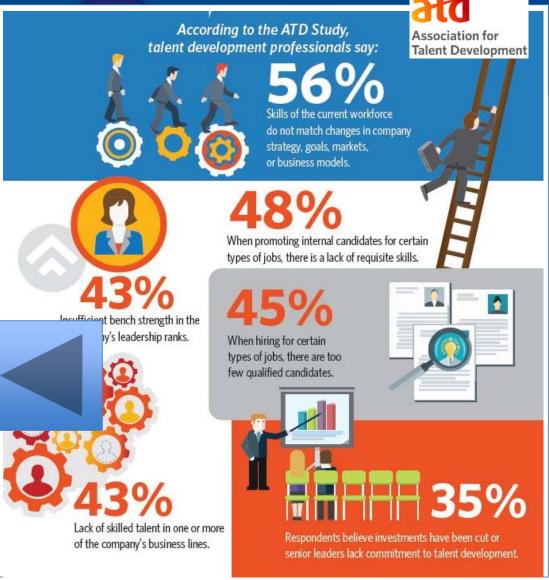
SUNY MICRO-CREDENTIAL POLICY FRAMEWORK

6. Allows for Multiple Micro-Credential Types











SUNY MICRO-CREDENTIAL POLICY FRAMEWORK

6. Allows for Multiple Micro-Credential Types

Add Complementary Skill Sets

Motivate Existing Students

A New Access Point to or Back to Higher Education

SUNY Micro-Credentials **Upskill Incumbent Workers**

Ongoing Professional Development

Re-Training

Address Emerging Employer Needs: More T-Shaped Graduates!

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A New Tools to Serve Business, Industry, & Community Partners; No Matter Where They May Fall on Your Partnership Continuum

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SUNY Micro-Credentials:

1.

6.

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3.

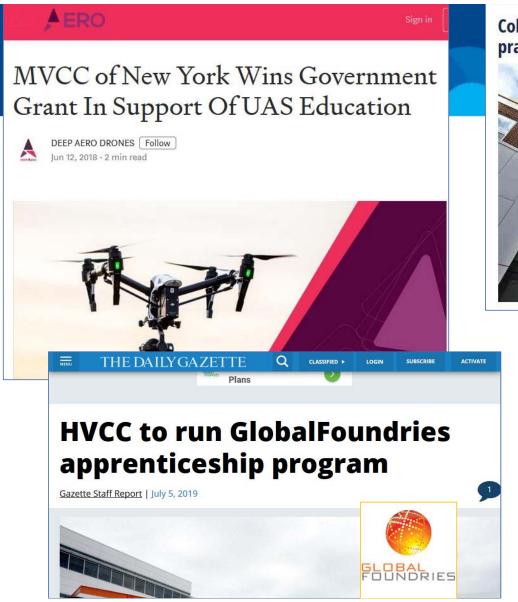
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10.



College of Nursing awarded \$666K grant for more skilled nurse practitioners to stem opioid crisis















www.suny.edu/microcredentials



National Allies for Parents in Special Education





Micro-Credential	Description	Campus
Essential Tableau Skills	Students will be able to prepare and filter data to create different data visualizations (including maps using geographic data and calculated fields), apply analytics to solve business problems, and build interactive dashboards to communicate their findings through this popular analytic platform.	University at Albany
IT Support Professional	Preparation for in-person or remote help desk focusing on troubleshooting and customer service, networking, operating systems, administration and security; pathway to an associate degree in Computer Information Systems	Mohawk Valley CC
Web Application Developer	This credential is designed to prepare students for a career in Web Application development. Educational and financial institutions and small businesses of all types have expressed this need. Pathway to an associate degree in web design.	Ulster CC
Small Business Management	Provides students with the skills needed to create, launch, and manage a small business or to work within an entrepreneurial venture with an emphasis on the foundations of business, small business management principles and marketing. Pathway to an associate degree in Business Admin or Business Management	Dutchess CC
Level I Accounting and Finance	Financial, Managerial, and Computerized Accounting. Pathway to an associate degree in Business: Accounting.	Fulton Montgomery CC
Level II Accounting and Finance	Advanced Bookkeeping and Federal Income Taxes. Pathway to an associate degree in Business: Accounting.	Fulton Montgomery CC
Communications Campaigns	Prepares learners to develop effective messages and campaigns in diverse fields, including marketing, health, and politics.	University at Buffalo
Improvement Science Leadership	Prepares leaders and practicing professionals in education and other social sector organizations to engage in systemic improvement.	University at Albany















https://www.coursera.org/business/?utm_campaign=website&utm_content=banner-from-B2C-home&utm_medium=coursera&utm_source=enterprise





Applying Best Practices for Email Communication in the Global Workplace

Georgia Institute of Technology

Learn More >



Business Meeting Etiquette

University of Washington Continuum College

Learn More >



Business Presentations: The Persuasive Speaker

Georgia Institute of Technology

Learn More >



Communicating & Deliberating in Work Teams

University of Wisconsin Extended Campus University of Wisconsin - La Crosse

Learn More >











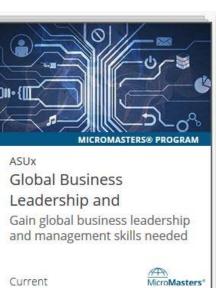








Micro-Masters



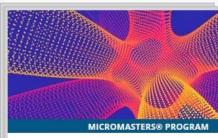


EdinburghX
Predictive Analytics for
Business Applications

Kick-start or accelerate your career in analytics by learning

Current





NYUx Integrated Digital Media

Fostering creative practice, design research and

Current

Current



MicroMasters"





Strategic Communications: Supporting Campus/Business Partnerships Around Micro-Credentials

- Consistent messaging is key
- People have to understand it before they accept it
- The Elaboration Likelihood Model of Persuasion: individuals are motivated to change their minds or behaviors either:
 - Centrally, by carefully reviewing data, detail, examples; or
 - Peripherally, by looking for shortcuts to help them evaluate information and make a decision (who else says this is important? Is it like something else we've done that's worked?)

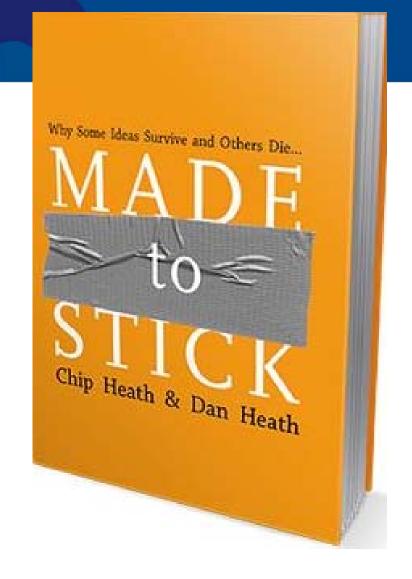
Good Resource: https://slidebean.com/blog/startups-elevator-pitch-examples

Elevator Pitch

- State your objective (introduce micro-credentials)
- Explain their uses and benefits (define micro-credentials)
 - Over time, use examples, tell a story
- Point to data, examples of whose doing it now (Elaboration Likelihood Model of Persuasion)
- End with a question that solidifies a next step (Are you seeing a skills gap among current employees? How about new employees? Can we meet to discuss?)

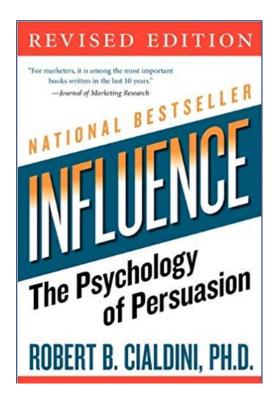


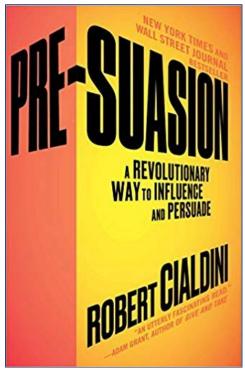
- Simplicity
- Unexpectedness
- Concreteness
- Credibility
- Emotions
- Stories



Six Principles of Influence

- Reciprocity
- Scarcity
- Authority
- Consistency
- Liking
- Consensus





Strategic Communications Plan for Business/Industry MC Partnerships

- 1. Situation Analysis
- 2. Target Audiences
- 3.Goal
- 4. Objectives
- 5. Strategy
- 6. Tactics
- 7. Timeline & Budget
- 8. Performance Indicators (Evaluation)

Objective #1: Increase Awareness of MCs as Tool for B/I

- Strategy A: Collaboratively develop & broadly share "MC for business" messaging via web, social media, promotional materials, staff materials
 - Tactic 1: Establish process for review and vetting of key MC messages for B/I
 - Tactic 2: Produce handout and/or brochure and/or intro slide deck
 - Tactic 3: Create staff talking points
 - Tactic 4: Identify MC contacts on campus; where will questions be forwarded?
 - Tactic 5: Create micro-credential webpage for business/industry partners
 - Tactic 6: Set a schedule for social media: targeting B/I
- Strategy B: [Your Thoughts?]

Objective #2: Build Initial Supporters/Influencers

- Strategy A: Set in person meetings with the CEO and HR manager of 3 5 companies
 - Tactic 1: Do homework on each company
 - Tactic 2: Send in advance of meeting 1 page fact sheet on MCs and some initial questions to be discussed at the meeting
 - Tactic 3: Use 3-4 slide deck as a hand out to review MCs: features/benefits
 - Tactic 4: Discuss questions / brainstorm
 - Tactic 5: Identify urgent needs
 - Tactic 6: Identify next steps: 1) ideally pilot opportunities what can we get up and running quickly? 2) if not, follow-up meeting?

Objective #3: Expanding the Audience

- Strategy A: Addressing Known Problems at a Specific Business or Cluster of Businesses
 - Tactic 1: Make initial contact to verify issue persists, introduce MCs
 as one possible tool to help could be phone or email
 - Tactic 2: Set up in-person meeting
 - Tactic 3: Reiterate understanding of the issue, identify possible micro-credentials to help
 - Tactic 3: Brainstorm
 - Tactic 5: Identify next steps: 1) ideally pilot opportunities what can we get up and running quickly? 2) if not, follow-up meeting?

Strategy B: Expanding the Audience

- Tactic 1: On-campus MC roundtables by industry?
- Tactic 2: Leverage early adopters by inviting them (CAO, HR, employee) to speak
- Tactic 3: Create exercise that allows attendees to identify needed skills and competencies/review current challenge & obstacles
- Tactic 4: Explore MC development to meet identified needs. Are their industry standards/certifications to be aware of? Are there opportunities to bring in other SUNY campuses?
- Tactic 5: Ask for pilot volunteers, note that you will be following-up with everyone individually
- Tactic 6: Reach out to all attendees in follow-up ask about pilot, offer a second meeting. Also invite them to a campus event.

Objective #4: Assess Early Adopter Experience

- Strategy A: Survey
 - Tactic 1: Develop and distribute satisfaction survey for the corporate staff involved
 - Tactic 2: Develop and distribute student satisfaction survey
- Strategy B: In-Person Debrief Meeting
 - Tactic 1: Review survey results and discuss plan for incorporating feedback into the program for the next cycle
 - Tactic 2: Discuss other potential opportunities for microcredentials or related program development



www.suny.edu/microcredentials

cynthia.proctor@suny.edu



SUNY Micro-Credentials: Supporting Business/Industry Partners in New Ways Strategic Communications Toolkit

Prepared for Partnerships in Higher Education October 22, 2019

DISCUSSION DRAFT

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I. Key Elements of a Strategic Communications Plan

Situation Analysis	Brief summary of: 1) the current environment (ex. Currently there is a lack of awareness of micro-credentials (MCs), inconsistent understanding among students, faculty and potential partners); and, 2) the issues the plan is designed to address (Ex. increase understanding of MCs and their potential use, increase awareness of campus MC program, increase partnerships to develop/inform MCs, increase enrollments in MCs). Identify here any internal and external factors that might need to be addressed (working relationship between academic affairs and continuing education/workforce development; program logistics).
Target Audiences	Think internal and external. Everyone who plays a role in plan execution; everyone you want to reach through the plan.
Goal	What the current environment will look like <i>after</i> your plan has been successfully executed.
Objectives	Objectives are the stepping stones that lead to meeting your goal, they inform strategy and tactics. There are three types of objectives:
	 Informational (achieving consistency in message, improving comprehension, increasing exposure to message)
	Attitudinal (creating, reinforcing or changing attitudes)
	Behavioral (encouraging the desired behavior).
	** It's imperative to nail down, and keep repeating, your key messages. They can and should vary by audience. But they should be brief and easy to remember.
Strategy	Generally, how are you going to reach your goal and meet objectives? What are the categories, types of activity that will help get you there (public relations, media relations, web and social media, use of influencers, etc.)?
Tactics	The nitty gritty, the specific action steps you will take. Should be explicit and measurable. Ex. Objective: Assure consistent MC messaging. Strategy: web, social media, marketing materials. Tactic 1: collaborative develop messaging.
Timeline & Budget	It helps to align tactics to a timeline and pre-assign a lead person to be responsible for completion.
	The budget should also align with tactics. What existing resources can be leveraged?
Performance Indicators (Evaluation)	What steps can you take to tell you if you have achieved success? (ex. traffic to webpage, inquiries about micro-credentials, enrollment in micro-credentials, number of faculty developing micro-credentials, etc.)

You can develop a Strategic Communications Plan for an entire institution or initiative or just one component of an initiative. The examples that follow are for a strategic communications plan for business/industry micro-credential partnerships.

These could easily be adapted for other potential micro-credential partners such as non-profit/community organizations or P-12 districts.

I. A. Sample Objectives, Strategies & Tactics

- I. Objective #1: Increase Awareness of MCs as Tool for Business/Industry
 - Strategy A: Collaboratively develop & broadly share "MC for business" messaging via web, social media, promotional materials, staff materials
 - Tactic 1: Establish process for review and vetting of key MC messages for B/I
 - Tactic 2: Produce handout and/or brochure and/or intro slide deck
 - Tactic 3: Create staff talking points
 - Tactic 4: Identify MC contacts on campus; where will questions be forwarded?
 - Tactic 5: Create micro-credential webpage for business/industry partners
 - Tactic 6: Set a schedule for social media: targeting B/I
 - Tactic 7: Set a public speaking schedule: chamber of commerce, REDC

II. Objective #2: Build Initial Supporters / Influencers

- Strategy A: Set in person meetings with the CEO and HR manager of 3 5 companies
 - Tactic 1: Do homework on each company
 - Tactic 2: Send in advance of meeting 1 page fact sheet on MCs and some initial questions to be discussed at the meeting
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III. Objective #3: Expanding the Audience

- Strategy A: Addressing Known Problems at a Specific Business or Cluster of Businesses
 - Tactic 1: Make initial contact to verify issue persists, introduce MCs as one possible tool to help could be phone or email

- Tactic 2: Set up in-person meeting
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- Tactic 4: Explore MC development to meet identified needs. Are their industry standards/certifications to be aware of? Are there opportunities to bring in other SUNY campuses?
- Tactic 5: Ask for pilot volunteers, note that you will be following-up with everyone individually
- Tactic 6: Reach out to all attendees in follow-up ask about pilot, offer a second meeting. Also invite them to a campus event.

IV. Objective #4: Assess Early Adopter Experience

Strategy A: Survey

- Tactic 1: Develop and distribute anonymous satisfaction survey for the corporate staff involved.
- Tactic 2: Develop and distribute student satisfaction survey

Strategy B: In-Person Debrief Meeting

- Tactic 1: Review survey results and discuss plan for incorporating feedback into the program for the next cycle.
- Tactic 2: Discuss other potential opportunities for micro-credentials or related program development.

II. Elevator Pitch & Pitch Slide Deck

Elevator Pitch

- State your objective (introduce micro-credentials)
- Explain the uses and benefits (define micro-credentials)
 - Over time, use examples, tell a story
- Point to data, examples of whose doing it now (Elaboration Likelihood Model of Persuasion)
- End with a question that solidifies a next step (What are your current training/development needs? What are the skills gaps you are looking to fill?)

Sample elevator pitch:

We have a new option for smaller credentials that I think are a good fit for XXX - to upskill current employees and also strengthen the pipeline of new employees. SUNY microcredentials focus on specific skills and competencies and can be tailored to meet your needs. They great thing is that they can stack together with other micro-credentials to put your employees on a path to an initial or advanced degree. It's a SUNY-wide effort, our SUNY campuses are involved. We have a number of business partners—of all sizes—that have signed on. I'll send you a link to our website and some additional information. We would love to work with you on developing micro-credentials for XXX. Can we meet next week?

Pitch Slide Deck

- Think of pitch slide decks as handouts. You will print out hardcopies of a small number
 of slides (full page slides or notes pages) that you will hand to all attendees as a guide
 during the discussion. It is not necessary to project the slides. Depending on the size of
 the group, you could also use the one-page handout (templates below) as a guide.
- You may wonder why you would want to use a pitch deck at all? Well, sometimes, if you
 are meeting with a high level individual, an informal conversation can take a number of
 twists and turns. They are busy and have a lot on their mind! Having a handout that you
 are using to talk through can be a good way to keep focus at the meeting.

Note: The company Slidebean, which I just happened to stumble upon, has what I think are great video tutorials and examples of both elevator pitches and "pitch slide decks." Slidebean is a company that sells "automated" presentation slides, you enter in the content and they arrange a professional look and feel. I have <u>not looked</u> at their product at all so this is by no means an endorsement! The resources on elevator pitches and pitch slide decks are available for free at this link:

Elevator Pitch: https://slidebean.com/blog/startups-elevator-pitch-examples
Pitch Slide Decks: https://slidebean.com/blog/startups-what-is-a-pitch-deck-presentation

III. Sample Fact Sheets

What follows are two micro-credential fact sheet templates specifically designed for potential business/industry partners: a one page fact sheet and a two-page fact sheet that has room to list a sampling of campus micro-credentials.

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SUNY Micro-Credentials:

A Flexible Approach to Skills Development, Professional Development and Academic Success

Visit [your micro-credential webpage] today!

WHAT ARE MICRO-CREDENTIALS? Micro-credentials are compact credentials that verify the achievement of in-demand skills and competencies. They complement but differ from traditional degrees or certificates in that they are offered on flexible timeframes (online, in the classroom, on-site) and tend to be highly focused. SUNY's innovative micro-credential program provides recipients with the skills necessary to get a job, adapt to job changes, advance, and, meet academic goals. SUNY micro-credentials serve as pathways to continued success—often stacking with other micro-credentials and other education/work experience to satisfy initial or advanced degree or certificate requirements.

SUNY MICRO-CREDENTIALS SET A NEW STANDARD: SUNY micro-credentials are comprised of leading-edge courses from registered degree programs at SUNY [campus name]; innovative applied learning experiences (for which SUNY has set nationally recognized quality standards); industry certifications; and/or non-credit coursework that has been evaluated for credit equivalency by qualified SUNY faculty. SUNY micro-credentials have the same quality and rigor as its degree and certificate programs. Defined by SUNY-wide policy, SUNY micro-credentials:

1	Verify Specific Skills & Competencies Earned (learning outcomes, assessment, examples of student work)
2	Carry the Endorsement of [Insert campus Name]
3	Were Established Through Faculty Governance Processes
4	Are Meaningful and of High Quality (strategic, portable, & stackable)

THE POWER OF SUNY MICRO-CREDENTIALS: Workforce focused micro-credentials can be used to:

- Upskill or retrain existing workers (ongoing professional development at every level);
- Supplement existing knowledge with new, complementary skill sets (to position new grads to better meet your needs and to prepare incumbent workers for transition); and
- Provide a new access point to higher education for those with little or no college or who are in need of an advanced degree.

SEEKING YOUR INPUT: We see micro-credentials as one more tool—along with certificates, degrees, industry certifications, applied learning, continuing education/workforce development [optional: research partnerships]—to help us support your growth and sustainability. The strongest workforce focused microcredentials are developed in partnership with you; responding to your needs, resolving any identified skills gaps, and supporting your plans for managing change and continued growth.

TO LEARN MORE: Contact XXXXX.

More details at [your micro-credential webpage] [insert logo]

SUNY Micro-Credentials:

A Flexible Approach to Skills Development, Professional Development and Academic Success

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- Provide a new access point to higher education for those with little or no college or who are in need
 of an advanced degree.

GUIDING PRINCIPLES OF SUNY'S MICRO-CREDENTIAL POLICY (abbreviated)

- 1. Academic quality is paramount for SUNY micro-credentials. The development process assures that micro-credentials have the same quality and rigor as a SUNY degree program.
- 2. SUNY micro-credentials are informed by market data and align with industry/sector standards.

[Add logo at bottom left]

- 3. SUNY micro-credentials are designed to be flexible and innovative so that we can be responsive to student demand and partner needs.
- 4. SUNY micro-credentials are aligned with our campus mission, leveraging the expertise of our talented faculty.
- 5. SUNY Micro-credentials are portable (have value beyond the institution) and stackable (have value on their own and serve as a pathway to a degree or certificate (at all levels)) wherever possible.
- 6. SUNY micro-credentials are designed to maximize partnerships.

SEEKING YOUR INPUT: We see micro-credentials as one more tool—along with certificates, degrees, industry certifications, applied learning, continuing education/workforce development [optional: research partnerships]—to help us support your growth and sustainability. The strongest workforce focused micro-credentials are developed in partnership with you; responding to your needs, resolving any identified skills gaps, and supporting your plans for managing change and continued growth.

MICRO-CREDENTIAL EXAMPLES: A *sampling* of SUNY micro-credential titles [offered now or in development or being considered] follows:

Micro-Credential Title	Description

FOR ADDITIONAL INFORMATION: Contact [XXXXX, email and phone].

More details at [your micro-credential webpage]
[insert logo]

IV. SUNY Micro-Credential Policy: Quick Reference Guide

In the initial stages of micro-credential development on your campus, you may find it helpful to refer potential partners to the System-wide micro-credential webpage: www.suny.edu/microcredentials. The webpage has links to key policy documents, a library of research and resources, and a listing of all micro-credentials developed to date.

What follows is a quick reference guide on SUNY's policy. *Note that consistency in how all campuses talk about SUNY's unique micro-credential definition helps to build our state-wide and national brand.*

SUNY Micro-Credential Policy

- SUNY's January 2018 policy applies to all campuses.
- SUNY's January 2018 policy applies to both credit and non-credit micro-credentials.
- SUNY micro-credentials can be online, in the classroom, hybrid.
- The policy sets a SUNY specific micro-credential definition. SUNY micro-credentials:
 - 1. Verify, validate, and attest that specific skills and/or competencies have been achieved;
 - Recognize real learning experiences that have associated learning outcomes and assessments, where there are examples of student work.
 - 2. Are endorsed by the issuing institution;
 - Micro-credentials have the endorsement of the campus Chief Academic Officer.
 - 3. Have been developed through established faculty governance processes;
 - ➤ The same process used to approve new degree programs. Note: campus governance bodies can set specific criteria for the review of micro-credentials.
 - 4. Are designed to be meaningful and of high quality:
 - a) <u>strategic</u>: campuses are strategic in how they implement micro-credentials, keeping in mind specific goals and the needs of the target audience, i.e., issuing a micro-credential for every class in every degree program dilutes their value.
 - b) **portable:** have value outside of the awarding institution (to an employer or other institution of higher education) and assure portability by using the Open Badges 2.0 standard set by the IMS Global Learning Consortium; and
 - c) <u>stackable</u>, i.e., wherever possible, each micro-credential has value on its own and can also stack together with other micro-credentials to reach the requirements of an initial or advanced degree or certificate.
- SUNY micro-credentials are powerful tools in supporting student success because of the multiple ways in which they can used:

- Used in an existing degree program to mark the completion of a particularly challenging set of courses, micro-credentials can motivate students to persist;
- Used to supplement an existing degree program, micro-credentials can give students complementary skill sets that help them to distinguish themselves in the marketplace;
- Micro-credentials can provide a new access point to higher education for adult learners with little or no college; a new pathway—that they can complete in smaller steps, on their schedule—to immediately valued job skills and a degree; and
- Micro-credentials can support alumni and business and industry partners a flexible vehicles to upskill incumbent workers, provide professional development, or re-training.
- **Taxonomy around micro-credentials.** A digital badge is a valuable way to recognize that a micro-credential has been earned. The goal is for SUNY campuses to have micro-credential programs. "Degree is to Diploma as Micro-Credential is to Digital Badge," Anne Reed, UB.
- For those campuses using digital badges, meta-data is a must and should include:
 - Skills and competencies (usually by keyword);
 - Learning Outcomes;
 - List any industry or professional standards incorporated into the micro-credential;
 - A summary of the assessments (exams, presentations, projects, etc.); and
 - Links to examples of student work.
- Those campuses not using digital badges should also think about how to convey the
 information described above. This meta-data can be very valuable in helping students
 internalize and articulate all that they have accomplished.

SUNY Micro-Credentials: Supporting Business/Industry Partners in New Ways

Notes/Discussion

•	Provide up to 10 key words or phrases to describe SUNY Micro-Credentials
	1.
	2.
	3.
	4.
	5.
	6.
	7.
	8.
	9.
	10.
	Your elevator pitch:

•	Sample Objectives, Strategies and Tactics – group discussion Objective #1: Increase Awareness of MCs as Tool for Business/Industry					
	 Strategy A: Collaboratively develop & broadly share "MC for businessmessaging via web, social media, promotional materials, staff mater 					
	• Strategy B: - Suggestions?					
	Objective #2: Build Initial Supporters/Influencers					
	• Strategy A: Set in person meetings with the CEO and HR manager of 3 - 5 companies					
	What questions could we ask the business partner in advance of the meeting?					

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The Workforce Is Calling, Higher Education, Will You Answer?





120 million graphic @неатнегмсдоwам

Missing the Market

This week, the IBM Institute for Business Ventures announced that its most recent study found that 120 million people worldwide will need to retrain in the next three years in order to be ready to work with automation and advancing organic cognition (colloquially known by the misnomer "artificial intelligence"). Of those, per the report, nearly half are Chinese (50.3 million), followed by Americans (11.5 million), Brazilians (7.2 million), Japanese (4.9 million), and Germans (2.9 million). According to the National Center for Education Statistics, current undergraduate enrollment in the United States is about 20 million. American universities are in crisis, with their very business model and value proposition under threat. Yet they miss the elephant in the room: if you consider the urgent need to retrain the U.S. workforce, there is unmet market demand to serve a population more than half the size of the current undergraduate classes. I have advised university presidents, I have spoken on numerous college and university campuses, and I have read more than my fair share of mission statements. Rarely do they mention "degrees" or "college-age students" although that is what they sell and to whom they sell it; they most often mention "transformational learning experiences." Who are they transforming? University presidents and boards: the American—no, the global —workforce awaits your answer.

Higher Education Outlook: Distressed

Several years ago, Harvard Business School professor and author of the seminal *The Innovator's Dilemma* Clay Christensen predicted that "as many as half of American universities would close or go bankrupt within 10 to 15 years." When asked about this prediction more recently, Christensen doubled down: "If you're asking whether the providers get disrupted within a decade—I might bet that it takes nine years rather than 10." The closures have not been that swift but perhaps they should be, as a 2016 Ernst and Young study found 800 of the approximately 4,000 colleges and universities in the United States vulnerable to "critical strategic challenges." The website Education Dive tracks college and university closures; on its running list, 86 colleges have closed, merged, or been acquired since 2016. While many, perhaps most, of the mergers may be distressed deals, some are long-overdue strategic moves to better align a comprehensive portfolio of offerings from subject matter experts with facilities to reach a broader audience or simply common-sense consolidation of operations of geographically adjacent institutions. Expect the number of mergers to rise.

Higher Education Diagnosis: Major Myopia

Higher education, in the United States at most institutions, is not sustainable. The business model is badly broken. Costs are too high. Debt levels for students are daunting. And given the speed of change, by some reports, much of the value of the content of an undergraduate degree expires at or before graduation. A survey by Career Builder found that half of graduates do not go into the field of their university major and one third of graduates never work in the field of their major. LinkedIn data shows that while recent graduates used to have 1.5 jobs in the first five years after graduation, they now have almost double that number. So if you are myopically focused on preparing your students for their first jobs, you are critically shortsighted. More jobs, more adjustment, more adaptation. How do we prepare folks for that? Undergraduate students need some of the skills most in the demand in the market today—uniquely human soft or behavioral skills in learning and adapting in order to create new value. Why isn't this the focus of higher education?

Higher Education Prescription: The Larger Market

What is the target market for higher education? By all accounts, and looking at marketing expenditures, the market is high school students. Higher education institutions are deeply investing in fighting over who gets what percentage of the 20 million students seeking undergraduate degrees, while a market of almost 12 million in the United States alone is untapped. Given the reach of online education, it is arguable that the market potential is much, much greater than that 11.5 million.

Today In: Leadership

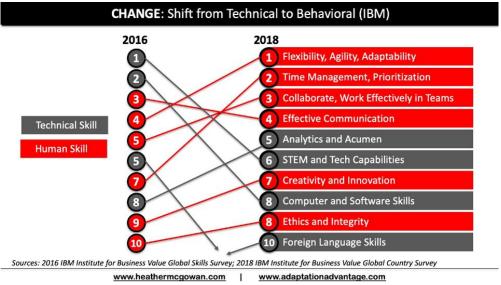
Higher Education Threat: Debt

Also this week, perhaps in an attempt to persuade us that there's "nothing to see here, folks," Beth Akers, a senior fellow at the Manhattan Institute and a former Council of Economic Advisors economist, declared in a *Boston Globe* opinion piece, "Actually, Most Millennials Aren't Drowning in College Debt." Student loan debt currently stands at \$1.5

trillion, higher than any other form of debt except mortgage obligations, and increasingly, parents are taking out loans for their kids while some of them are still under debt loads from their own education. As a result, Millennial home ownership is 8% below that of Generation-X and retirement may be affected for all generations. There certainly *is* something to see here. Zack Friedman has offered a comprehensive view on student loan debt from a finance perspective, and Brandon Busteed has done so on the topic of how to consider the cost and return on college and university investment from an educational perspective.

Workforce Challenge: Shifting Market Demand for Skills

PricewaterhouseCoopers Annual CEO Survey, IBM Institute for Business Ventures, The World Economic Forum, The Institute for the Future. Pick your favorite source, because they are reporting almost exactly the same thing. Each has a list of top future-of-work skills and nearly all are focused exclusively on uniquely human skills—those skills that are hard to automate. Recently, IBM noted the dramatic shift in the skills in demand in 2016 and 2018 as determined by surveying 5,670 global executives in 48 countries. Note the rise in demand for nontechnical, uniquely human skills. But what are universities focused on? Codifying and transferring existing skills and predetermined knowledge, especially technical skills, to get students their first job.

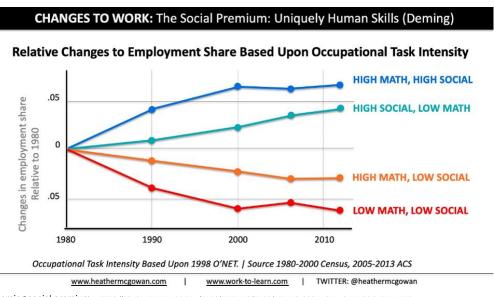


shift.IBM.technical.to.behavioral https://www.ibm.com/downloads/cas/epymnbja

As the Workforce Needs Human Skills, Universities Close Liberal Arts Programs

Yes, that's right. In crisis, many higher education institutions are closing liberal arts and humanities programs in favor of majors filled with technical skills training. A study by David Deming and Kadeem Noray at Harvard University and the employment analytics company Burning Glass Technologies found that "the earnings premium for STEM majors is highest at labor market entry and declines by more than 50 percent in the first decade of working life." The reason for this is that technological change is so rapid that workers simply cannot learn the new tools and technologies as efficiently as students, who are dedicated to learning. The result is continual turnover. People with human skills

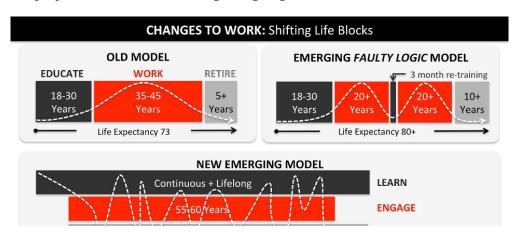
or aptitudes parlay their STEM experience into other jobs where it is an asset, notably in management. It is interesting to note that more than half the people surveyed by the British Council in management and leadership positions had an undergraduate degree in either humanities or social science. My take on this is that while technology skills depreciate, human, or behavioral, skills appreciate. A previous study by Deming, which I have cited several times, found that while jobs requiring high math and high social skills are on the rise, so are jobs that require high social skills but low math skills, while jobs requiring high math skills and low social skills have been declining for the past several decades. Deming's work shows that social skills have been rising since the 1980s, yet we are not prioritizing those skills in education.



deming.social.premium https://scholar.harvard.edu/files/ddeming/files/deming_socialskills_may2017_final.pdf

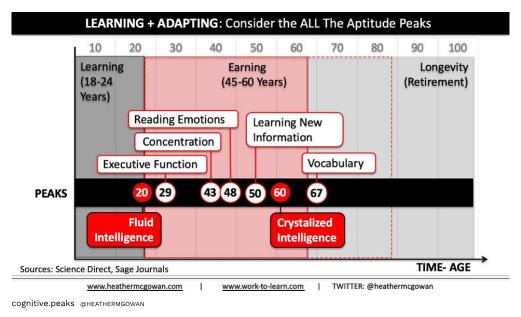
Furthermore, a recent study by the BBC found this: "In the US, an undergraduate student who took the seemingly most direct route to becoming a lawyer, judge or magistrate —majoring in a pre-law or legal studies degree—can expect to earn an average of \$94,000 a year. But those who majored in philosophy or religious studies make an average of \$110,000. Graduates who studied area, ethnic and civilizations studies earn \$124,000, US history majors earn \$143,000 and those who studied foreign languages earn \$148,000, a stunning \$54,000 a year above their pre-law counterparts."

Yet we gut liberal arts programs in favor of technical programs to get young people their first job just when their career arc is growing longer and more volatile.



The Growing Market That Higher Education Ignores

Per The Enterprise Guide to Closing the Skills Gap by IBM, "The skills challenge will not dissipate; in fact, it's increasing in severity. Global labor markets are only tightening, as unemployment rates continue to decline. Compounding the issue, new skills requirements continue to emerge, while other skills are becoming obsolete. And while digital skills remain vital, executives tell us soft skills have surpassed them in importance." The Sisyphean task of hiring and firing ("fill and spill") to match talent to need simply no longer works. As the IBM report states, "Organizations must embrace the fact that learning is a lifelong journey. While lifelong learning has always been critical, our digital world now requires new ways of working, which makes lifelong learning a must to the long-term success of organizations and individuals. As such, organizations should consider the propensity to learn as a top skill in employees. The propensity to learn and embrace lifelong learning should be encouraged and empowered by organizations and considered key requirements in hiring." Recent research by MIT and Massachusetts General Hospital suggests that while we have long positioned learning in the first third of our lives due to conventional wisdom about our peak fluid intelligence, we are now discovering that we have many peaks across our lives.



Who Will Answer The Call?

To summarize, learning agility and adaptability are now paramount considerations in hiring. Recent neuroscience research suggests that humans may be built for lifelong learning. Business leaders report that social or behavioral skills are now the most indemand skills with 80% of CEOs reporting talent is their number one concern. One hundred and twenty million people worldwide, with almost 12 million in the United States alone, will need retraining in both behavioral and technical skills. Higher

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6 of 6

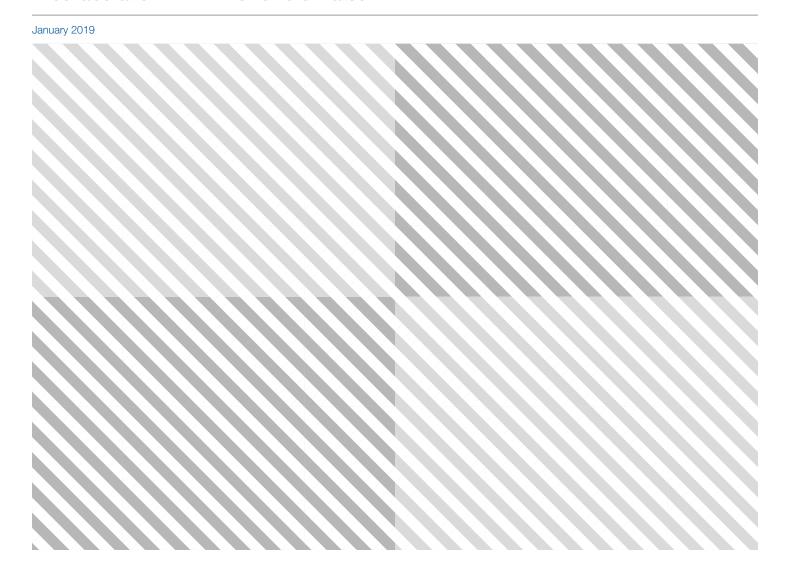


COMMITTED TO IMPROVING THE STATE OF THE WORLD

Centre for the New Economy and Society White Paper

Strategies for the New Economy Skills as the Currency of the Labour Market

in collaboration with Willis Towers Watson



This white paper is produced by the World Economic Forum's Centre for the New Economy and Society as part of its Shared Vision for Talent project. For more information, or to get involved, please contact cnes@weforum.org.

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Contents

- **01** Introduction
- 03 10 strategies for building a skills-based labour market

Learning ecosystem strategies

Workforce ecosystem strategies

Enabling environment strategies

- 08 Emerging initiatives for creating a skills-based labour market
- **15** Conclusion
- 17 Notes
- **19** References
- 21 System Initiative Partners
- 23 Project Team

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Introduction

The qualifications achieved in schools, colleges and universities, the brand of an educational institution or an employer, the social networks of a potential job applicant—all are signals currently used to indicate potential fit between individuals' capabilities and job opportunities in the labour market. These proxy signals have their origin in shortcomings in the capacity to measure and evaluate the actual skills, knowledge, behavioural qualities and abilities that individuals have gained throughout their lives.

An inefficient labour market

There are three key reasons why a suboptimal system of skills proxies tends to contribute to both labour market inefficiencies as well as social inequalities. First, learning and employment ecosystems are currently built for a world of work that is no longer a reality. They are premised on the assumption of linear careers largely using a traditional life model of 'learn, do, retire'. That outdated model is too rigid for the current and future needs of the labour market. It assumes that learners prepare for the future by gaining formal qualifications early in their life course and that their job-fit can be identified through those early formal qualifications as well as by steady progression through a traditional, linear career ladder. At best, employers—and employees—are imperfectly matched for roles; at worst, the fit results in financial and non-financial losses for both parties.

Second, large-scale changes to job and skill demand in the Fourth Industrial Revolution (4IR) are bringing fresh challenges to an already struggling system for identifying job-fit and matching individuals to opportunities. For example, by 2022, the core skills required to perform most roles will, on average, change by 42%. Increasingly, a career for life is an artefact of the past, and this traditional mindset of 'learn, do, retire' mentioned above can no longer provide a futureproof approach. As automation and work converge, skills gaps are set to change at a faster pace and at a greater volume—leading to both talent shortages and job redundancies. To remain relevant and employable, workers are faced with the need to re-evaluate and update their skillsets; companies face a pressing need for innovative talent sourcing, matching and development strategies; and educators face pressure to update the focus of their courses and offerings. Consequently, there is a pressing need for more efficient proxies that can relay the skills that individuals acquire throughout their life course.

Third, today's proxy-based system of determining job-fit often exacerbates socio-economic inequalities. For example, success in primary, secondary and tertiary education remains one of the strongest predictors of long-term socio-economic inclusion² and has a demonstrable negative knock-on effect on social cohesion.³ Across a number of countries, the educational background of one's family is a predictor of the educational outcomes of future generations.⁴ Rewiring the skills ecosystem throughout an individual's lifecycle holds the potential to establish a fairer base for social mobility and a more level playing field for career progression.

Shifting to a system where skills are the core currency of the labour market thus has the potential to tackle existing inefficiencies in job-fit between employers and employees; help prepare for a near-future of greater volatility in the labour market; and enhance opportunity, prosperity and equality for workers. Such a shift would no doubt be challenging, requiring collaboration and coordination across multiple stakeholders. However, its potential returns are vast, for individuals, for business and for economies.

Shifting to a skills-based system

The need for such a system is becoming more urgent as the labour market demands both more digital and more 'human' skills in the midst of the 4IR. Understanding and meeting emerging skills demand and empowering individuals to learn, unlearn and relearn skills will need to form the basis of a new learning and working ecosystem—a shared vision for talent. The broad change that will be required in this new world of learning and work is to move away from traditional, front-loaded accreditation and siloed certificates to a system of lifelong learning infused with a shared set of skills-based indicators at its core.

In today's labour markets career paths are already seldom linear, and they will be less so in the future. As we shift to a model of 'learn, do, learn, do, rest, learn ... repeat', a transparent and tangible approach to skills allows learners to prepare themselves for employment by understanding their own passions and motivations, and channelling those dispositions to developing work readiness through effective skills gain. It allows educators access to near real-time data on skills demand and to ensure the skills needed across the labour market are taught and certified.

Similarly, it allows businesses to understand—in real-time—skills gaps and skills strengths, and to develop better methods of staff collaboration, in-house training and talent deployment.

Such a system demands a common currency—one that can recognize, certify, reward and enhance skills, and create a common framework among individuals and national, sectoral and workplace actors.⁵ For individuals, it holds the promise of professional fulfilment and well-being alongside the ability to better manage career transitions. Companies can expect to see efficiencies in sourcing and managing talent. Governments can expect more efficient labour markets, combined with the ability to more precisely provide education, retraining and income security support to those who need it.

In this white paper we suggest ten strategies to make this vision a reality, spanning across three types of interventions. The first type aims to integrate a skills focus in the learning ecosystem; the second aims to integrate a skills focus in the workforce ecosystem; and the third type aims to provide an enabling environment through alignment between different stakeholder groups.

10 strategies for building a skills-based labour market

Learning ecosystem strategies

1. Build, adapt and certify foundational skills

The set of required foundational skills commonly prioritized in today's education ecosystems are among the best-mapped to date, but will increasingly require further updating as core skills that can empower individuals for success in both education and in employment are in flux—with soft and technology-related skills rising in prominence. Namely, there is a need for complementing the focus on basic literacies with a focus on socio-emotional skills such as emotional intelligence, as well as skills such as active learning, complex problem-solving, inductive and deductive reasoning and digital fluency.

While foundational skills are typically developed in education before age 15, a fundamental rethinking of those key skills provides a new imperative to extend opportunities for refreshing and adequately certifying those foundational skills across all age groups. Sometimes referred to as 'literacies', foundational skills are frontloaded in the early years education (typically ages 0-8) and further developed in basic education (encompassing primary and lower secondary education, typically ages 8-14). Early years education sets the foundation for learning and skills development ⁷, personal competencies, confidence and sense of social responsibility. This initial investment has significant repercussions on later stage educational attainment, employment and a range of social and economic outcomes.8 Reform aimed at reframing foundational skills is already underway but remains at different stages of maturity. For example, Estonia and Finland have developed national curricula for foundational skills as well as a focus on lifelong education.9 A notable effort focused on bringing greater coherence to foundational skills is the Organization for Economic Co-operation and Development's (OECD) 2030 learning framework which has set out to map the new set of skills that educators should look to teach in today's education systems.¹⁰

Within this strategy, a reframing of traditional approaches to learning foundational skills should also be considered and include new teaching approaches such as play and gamification.¹¹ While educationalists play a central role in developing foundational

skills, it is also worth noting the important role of family, peers and communities. Finally, across today's education systems, there are few mechanisms for validating and assessing the attainment and the continued evolution of the foundational skills learned in the early stages of adult lives. There is a need for new tools that can validate foundational skills across the age range, identify variation in proficiency and assess the need for further upskilling among the population.

2. Build, adapt and certify advanced skills

Initially developed in the transition from basic education to the first point of employment in one's career, advanced skills can be built through vocational courses, tertiary education or as part of the initial phase of on-the-job learning. In this proposed strategy, traditional education across secondary, tertiary and vocational courses is reframed from assessing the completion rate of creditbased courses to innovative methods for certifying advanced skills and enhancing access to re-skilling and up-skilling for individuals. Rather than assessing the acquisition of a skill based on credits completed, the use of competency-based models is proposed as an alternative. 13 Measuring skill acquisition thus moves from assessing completion rates to measuring demonstrated proficiency. Such a re-orientation towards enhancing and communicating the skills content of education courses focused on preparing young learners for their first entry into the labour market also requires attention to codifying the skills content of existing curricula.14

The system of credit-based course certification systems remains focused on learning performed in fixed time periods according to largely rigid curricula. The opportunity to take continuous periods of time out to learn among adults is limited. To truly scale adult learning, more needs to be done to enable flexible learning trajectories that blend everyday responsibilities with lifelong learning. Despite some reform of secondary and tertiary education systems, which has introduced greater choice and opportunities for customizing course trajectories, reforms have broadly remained limited in scope. Educational technology can offer new ways to move beyond assessing the acquisition of advanced skills based on time spent in courses, credits completed or exams, toward iteratively measuring and developing proficiency and identifying both skills and subject area knowledge in tandem. One such example is Coursera, an online learning provider that

uses a tagging system to identify the skills acquired through online courses on their platform.¹⁵

Enhancing the skills content of courses, particularly in tertiary education, has the potential to empower individuals with the ability to communicate the relevance of their education to potential employers and will enable educators to monitor the translatability of their courses to the demands of the labour market. Inspiration can be taken from vocational education, which has been more broadly successful in infusing skills acquisition into the curriculum of courses through expert consultation and close collaboration with sectors. 16 Another example is provided by Viridis Learning, an education technology company that uses new data analytics to compile a skills map of community college learners and provide direct routes into employment by pre-qualifying learners for relevant employment through these new skills profiles. In addition, innovative reforms have been introduced in specific geographies, such as at the City Colleges of Chicago, that can serve as inspiration for local governments looking to reframe their local education system with a mind to current and future changes to the labour market, and the fresh demands on educators that follow.

3. Build, adapt and certify skills among the adult workforce

Limited coordination across company reskilling and upskilling efforts as well as poor public-private collaboration is contributing to labour market inefficiencies and excess costs associated with adult learning. Given the broader changes to value creation in the economy and the rapid expansion of new technology, in-demand skills will remain in flux for the foreseeable future. The scale of the reskilling and upskilling challenge requires better collaboration between businesses alongside a shift away from the traditional delineation between government-funded education and employerfunded education. Renewed adult training systems need to strike a more effective balance between public and private responsibility for financing skilling, greater agility to labour market demands and greater comparability of learning content across companies.¹⁷

Beyond school and university-level education, a range of opportunities are currently available to workers looking to iteratively expand and renew their skillset and knowledge throughout their careers. However, the investment in such re- and upskilling remains under-developed and the current system for updating skills across the adult workforce lacks coordination and common standards. For example, businesses commonly create bespoke upskilling and reskilling programs. To reduce costs and achieve scale across adult learning frameworks, there is an urgent need for mechanisms and incentives for refining and aligning the skills content of adult learning programmes while maintaining some competitive advantage for companies that develop bespoke programmes.

Education technology provides a range of new opportunities to develop cross-applicable skillsets among adult learners at lower costs and greater scale. Using the Coursera learning platform, Google developed a new IT Support Professional reskilling programme. A consortium of 30 companies such as Walmart, Intel, Hulu, and Sprint have agreed that the content in a new IT Support Professional Certificate is appropriate to their needs and have

committed to considering hiring learners who complete courses for entry-level positions in IT support. JFF, a leading non-profit organization focused on workforce development in the United States, has extended that consortium to small- and mid-sized businesses. An alternative approach is taken by General Assembly, which provides reskilling programmes focused on new, in-demand roles such as data scientists to a range of companies. Standards boards compiled of leading industry experts define and validate the skills taught in General Assembly courses. But not all potential avenues for developing skill-focused adult learning are driven by technology. One area of opportunity could be to expand the model of apprenticeship programs, a model which has proved to be a successful vehicle for developing skills among students and working professionals.¹⁸

4. Realize the potential of educational technology and personalized learning

As in-demand skills continuously evolve, educators and businesses have an opportunity to adapt curricula and learning, introducing needed reforms alongside greater efficiencies of scale though educational technology (edtech) that encompasses web-based learning, virtual reality and smart systems powered by artificial intelligence.¹⁹ Edtech is able to provide skilling content with a lower resource base, delivering learning at greater speeds, and varying duration—adaptable to both the provision of short- and longcycle courses. With its full potential yet to be realized, education technology holds the promise to broaden access to learning through open-source courseware and better opportunities to reskill through micro credentials. However, the potential of these new technologies to address skills gaps has not been fully realized. This reflects a need to reframe current edtech solutions away from methods for delivering isolated solutions and towards alignment with comprehensive skills frameworks.

Edtech is the umbrella term for a set of methods to deliver or augment learning and content that have large-scale potential to transform the fabric of learning ecosystems. According to one prediction, by 2020 the market for edtech is set to grow by 17% per annum to \$252bn.²⁰ The use of edtech to build foundational skills is well established. Yet uptake of edtech solutions across the learning ecosystem and labour market remains slower than initially expected. It has been suggested that businesses lack a clear understanding of the value and proficiency level of the learned skills and knowledge on such platforms and there are concerns about low completion rates of courses on edtech platforms.²¹

Edtech tools vary in their approach to delivering learning and content. Among those new tools are a range of approaches to delivering blended learning, such as flipped learning and adaptive learning, as well as Massive Open Online Courses (MOOCs), learning management systems, gamification and microlearning. Examples of such providers include the Khan Academy, Knewton and Smart Sparrow.

The edtech sector has historically been disproportionately focused on leveraging technology to enhance the accessibility of content and placed less emphasis on aligning content to existing education standards or using content to advocate new standards. Some

edtech providers are rolling out efforts to bridge that gap; among them, EdX, General Assembly and Coursera, which offer courses in partnership with educational institutions and businesses. As edtech solutions mature, a focus on skills-based credentialing, labour market relevance and testing of the effectiveness and viability of reskilling using edtech solutions promises to incentivize uptake of those solutions among businesses.

Workforce ecosystem strategies

5. Map the skills content of jobs

As jobs are augmented by technology, the tasks performed by a range of workers across the labour market are evolving at an unprecedented pace, driving demand for new skillsets. A dynamic system for mapping skills to tasks and jobs will enhance the signalling of skill needs between education systems and the labour market today and in the future. Currently, descriptions of the same role can vary significantly across organizations. Given the rapid evolution of today's labour markets it is more likely this reflects lack of coordination and definition than disparate variance in demand. Better signalling to learners of high-value and indemand skills can support broader recognition of job opportunities in the labour market and the pathways to leveraging those opportunities through effective reskilling. It provides a base for career management, articulating training and recruiting needs, and empowering career transitions.

National frameworks highlighting required competencies already exist, but are currently labour-intensive to create and update, requiring broad expert consultations in addition to gathering and analysing large numbers of job descriptions. ²⁴ This is exemplified by the O*NET portal, which maps and presents job requirements to jobseekers and career services within the United States. A range of such frameworks are also being developed within organizations using similar methods but localized to specific enterprises. ²⁵

Potential approaches to aligning and enhancing those current systems include: making use of new technologies to map job requirements faster and at greater scale with fewer resources, developing measures of skills adjacency and networks of connected skills²⁶ as well as focusing efforts on cross-functional skills and skills adjacency. For example, the Foundation for Young Australians has developed an approach to planning and matching skills to jobs, highlighting adjacent skills and potential job transition pathways in the Australian economy. Burning Glass Technologies has used innovative methods to map large quantities of job advertisements and convert that insight into information about job content, demand and skills requirements.

Expanding efforts to map the skills needed for jobs and identify jobs with similar skills can effect greater transparency across the labour market and enable economies to be proactive in skilling, reskilling and upskilling as jobs continue to evolve and workers face greater need to transition between declining and emerging opportunities.

Design coherent and portable certifications

Qualifications—and particularly, certificates—are a central marker for job-fit, yet the skills acquired and the comparability of qualifications remain unclear due to a lack of broad standards and principles of portability across different granting institutions, bodies and economies. Without common standards, individuals are unable to signal competencies that they currently possess, and employers are unable to validate job applicants' claims without further primary assessment. Under such circumstances, the brand value of any formal qualification and previous work experience become proxies for the skills held by individuals. Such proxies will continue to dominate judgement of role suitability and mobility within and between labour markets without coherent approaches to certification. The resulting friction points create additional inefficiencies when matching supply to demand in the labour market, making it difficult for workers to signal the skills they currently possess at all times—particularly in periods of career transition or when moving to new geographic locals. A closer focus on inter-operable skill certification alongside more broadly aligned standards for proficiency and assessment has the potential to empower individuals by enhancing their awareness of the extent and value of their skillset. This requires a broader shift away from the traditional delineation between government-funded education and employer-funded education to a model of greater collaboration between government and business on agile training systems that strike a better balance between public and private responsibility for financing and provide ongoing learning and certifications to workers.27

Closer collaboration and stronger agreement on cross-applicable certification—and on the measures of proficiency across educational institutions—can be incentivized through: clearly defined skills that are taught in each course mapped to a shared skills taxonomy, efforts at recognizing prior learning²⁸ and new methods of logging qualifications such as a distributed ledger (blockchain). Some experiments in aligning education frameworks are already underway, such as the European Qualifications Framework, which aims to connect the qualifications recognized between European Union countries. In addition, MIT's Digital Certificates Project has experimented with approaches to provide skills certification through badging, leveraging the capabilities of blockchain technology.²⁹

7. Rethink organization and talent management processes

Human resource policies and processes play a vital role when sourcing and developing relevant talent for companies looking to fulfil their strategies and goals. So Existing talent management processes are typically predicated on individuals filling roles calibrated to a fixed job architecture. Job requirements commonly list traditional degrees and established certificates. This model no longer fits: the current marketplace demands that businesses operate with greater agility than is afforded by these legacy structures and recognize a range of potential skilling trajectories.

In a world that requires agile and fast leadership, there is an increasing need to move from a hierarchy to a network of jobs.³¹

Today, talent is typically hired, developed, deployed and remunerated in line with a rigid job architecture and narrow pay bands. In tandem, organizational structures are based on jobs which are clustered based on function and arranged in a hierarchical manner. Each higher level has greater scope, impact and responsibility. Employees tend to perceive promotion to the next level in the defined career path as 'differentiation', leading to less incentives for lateral mobility.³²

The move required is one from a talent management system of organizing and filling jobs to a system that adapts to changing work and skills, meaning seamless and continuous matching of clusters of skills to evolving work requirements. A common definition of skills and process for logging them will create transparency and allow individuals and businesses to articulate priorities and organizational structure on that basis. Smart software and data analytics can support this shift in workforce planning through performance monitoring and prediction of resource requirements.

This shift can empower business agility through better redeployment of skills, matching the unique skills of each individual to successfully carry out work. However, caution must be exercised to balance the idea of 'plug-and-play' with skills and a needed human-centric approach to talent management that takes into consideration an individual's well-being.

Enabling environment strategies

8. Drive momentum around the concept of skills

Across education and training systems, as well as among employers, there is an urgent need to move beyond the practice of learning bodies of fact and refocus on building the behaviours and skills to apply knowledge to tasks. ³³ Such a shift will be especially conducive to adding granularity and aligning the language of job-fit between employers and educators as skills remain the most common markers of competency within the labour market. A shift to a focus on skills will support all learners' ability to signal their competencies to the labour market and allow greater collaboration between employers and educators.

Historically, the education system has maintained a disproportionate focus on knowledge and facts in tuition and assessment. Yet this is just one of the three pillars of the competency system, which is composed of not just skills and knowledge, but also attitudes and values. ³⁴ There is mounting evidence that too many individuals enter the labour market without the skills or mindset for success. ³⁵ To compound the shortcomings of the education system, employers often view the matching of skills to work as a static one-to-one relationship between degrees and certifications to a position.

Skills can be split into cross-functional and specialized skills—where the differentiation refers to the frequency with which those skills occur across all industries as opposed to an industry or profession. Skills can be further differentiated into technical and soft—the ability to use and develop technology versus working within the realm of human interaction. More recently, the newest in-demand skills are often referred to as emerging skills. Cognitive skills commonly cover conceptual thinking and the ability to process thoughts and perform various mental activities, and are most closely associated with learning, reasoning and problem-solving.³⁶

Complementary to skills, experts are increasingly looking to attitudes as a key ingredient of the competency model, moving away from the more static and deterministic nature of knowledge and abilities. Attitudes are consistent behaviours, emotional intelligence traits and beliefs that individuals exhibit that influence their approach to a variety of things such as ideas, persons and situations. Attitudes are learned and often a big part of the driving force of learning and the approach to doing tasks.³⁷

Each individual builds a unique basket of competencies throughout their life. Having competencies to successfully perform daily tasks depends on the interaction of knowledge, skills and attitudes that empowers the successful completion of the work at hand. 38 Within this framework, knowledge is the body of facts, principles and theories that are related to a field of work or study and can be further split into dependent knowledge (practical and procedural) and context-independent or theoretical knowledge. Complementary to knowledge are the range of physical, psychomotor, cognitive and sensory abilities that are required to perform a job role. They are sometimes referred to as innate and are harder to shape, requiring early-life targeted investment. 39

9. Align skills taxonomies

A range of inefficiencies and collaboration costs are driven by persistent differences in the language and definition of skills among stakeholder groups. It is becoming increasingly evident that the labour market must establish skills as a common currency to support collaboration between employers and educationalists. Consideration should be given to a common method for updating and consolidating skills nomenclature, skills clustering and skills definitions. Such a shift has the potential to establish a foundation for a more effective marketplace for upskilling and reskilling. Today, new efforts aimed at aligning skills taxonomies across labour markets are urgently needed.

The most-commonly used broad-based skills taxonomies are national or regional, and include O*NET, developed by the US Department of Labour and ESCO, developed by the European Commission. Definition of skills, among other elements such as knowledge and attitudes, are the result of consultations with local experts, periodic surveys and, broadly, crowdsourcing efforts. A range of skills taxonomies have also been developed by professional service providers and exist in tandem with talent assessment frameworks, job descriptions and titles. In the course

of working with clients, consultants extract relevant information from their existing taxonomies, reformulate, then combine with additional research and business intuition to varying effects.⁴⁰

The majority of skills taxonomies in use across labour markets are bespoke, seldom shared and often considered proprietary. ⁴¹ Bespoke taxonomies are tailored to the competencies required for specific business needs, values, strategy and vision. As jobs and skills shift in relevance at an unprecedented pace, questions have been raised about the ability to update and innovate within this system. Among the known drawbacks of bespoke taxonomies are the cost and speed of keeping definitions current and their tendency to be conservative rather than innovative. The skills taxonomies used across the public and private sector remain siloed, and this contributes to the rift between employers and educators.

New systems are currently in trial. Two prominent examples include Nesta's data-driven skills taxonomy for the UK, and the University of Chicago Open Skills Project, which crowdsources skills through public-private partnerships building on O*NET. Such efforts need further elaboration and new trials. Fresh efforts to map out best practice approaches for aligning skills taxonomies across the labour market are urgently needed. Potential design principles include an open-source architecture that would allow various stakeholders to 'plug in' and align their taxonomies, and embedding of those new taxonomies across talent firms, employment and career agencies.

Shape culture, mindsets and mechanisms for lifelong learning

Skillset relevance promises to be a key pillar of stability in today's labour markets. 42 Shaping a culture of lifelong learning will be essential across education and training systems, across businesses and more broadly across society. 43 Signalling and embedding this change requires more than individual will; it requires investment of time and money alongside thoughtful design of incentives to adapt for individuals. As the shelf-life of skills decreases, prioritizing a shift in mindsets, culture and mechanisms for lifelong learning will empower individuals to continue retooling businesses to better equip and deploy employees, and encourage the labour market to stay agile as jobs and business needs continuously evolve. The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn.⁴⁴ As the labour market shifts from a mindset of 'learn, do, retire' to 'learn, do, learn, do, rest, learn...repeat', disrupting job security, the need to continually add to one's skillset and the imperative of lifelong learning will become increasingly important levers for success.

Business and education leaders are facing a pressing need to consider the tools at their disposal to encourage a mindset of continuous retooling and development. Business culture is anchored in the values of a business, but even when values reorient, it is important to signal those values with appropriate investment. Today, investment in education and training is concentrated in the first quarter of an individual's lifecycle, which does not yet signal that lifelong learning is a priority. As more

even distribution of funding will incentivize lifelong learning and the notion of continuously shaping one's skillsets, benefiting both employers and employees. Businesses must understand such benefits in a macro sense, but also at an organizational level, with a focus beyond attracting and retaining top talent, but also ensuring that employees have the skills needed to attain organizational goals. 46 Some change is already underway among businesses, with organizations offering workers new, targeted learning paths. For example, Infosys promotes a culture of lifelong learning and dynamically invests in programmes to develop skills that match the company's latest business strategy.

The efforts of business leaders can be complemented by a broader cultural shift across society, anchored in a widely shared understanding of the continuous need to update skillsets across the lifecycle as well as the more micro but not insignificant change in mindset among individual workers and learners. In a skills-based labour market, faced with a range of essential skillset adaptations, individuals will increasingly need to adopt a growth mindset throughout all stages of their life. 47

Emerging initiatives for creating a skills-based labour market

A series of case studies are outlined below, describing the emerging, relevant initiatives that exemplify the approach to creating a skills-based vision for talent.

Learning ecosystem strategies

- 1. Build, adapt and certify foundational skills (3 case studies)
- 2. Build, adapt and certify advanced skills (5 case studies)
- 3. Build, adapt and certify skills among the adult workforce (6 case studies)
- 4. Realize the potential of education technology (6 case studies)

Labour market strategies

- 5. Map the skills content of jobs (8 case studies)
- 6. Design coherent and portable certifications (6 case studies)
- 7. Rethink organization and talent management processes (5 case studies)

Core enabling strategies

- 8. Drive momentum around the concept of skills (8 case studies)
- 9. Align skills taxonomies (5 case studies)
- 10. Shape mindsets, the culture and mechanisms for lifelong learning (4 case studies)

The Real Play Coalition promotes play-based opportunities to grow and learn, preparing children with skills for the future⁴⁸

Related to strategies: 1, 8, 9

Playful learning remains under-used across early years education, yet research has shown that play is a fundamental part of skill development. The Real Play Coalition—made up of IKEA, the LEGO Foundation, National Geographic and Unilever—are working to create a movement towards building a wide range of skills through play. The skills that can be developed through play are varied and include early literacy and numeracy, as well as skills such as creativity and problem-solving. Play, if used effectively, poses an innovative way to advance skill development, and different types of play can be utilized to develop different types of skills. But making use of such new approaches requires further

training. In Cotlands, South Africa, the Lego Foundation, Unicef and the Department of Basic Education developed a professional development programme for pre-school practitioners and primary school teachers that emphasizes methods for creating more playful learning experiences. The course utilized online courseware to reach rural teachers.

Chicago, USA: City Colleges of Chicago and Chicago Apprenticeship Network focus on the job readiness of learners, partnering businesses with educators to build future talent pools

Related to strategies: 2, 8

Across the United States, around a quarter of the students who enrol in higher education do not return in the second year.⁴⁹ In addition, researchers have commented on the difficulties faced by graduates in translating their acquired skills and the subsequent effects on their ability to transition from learning to work. To address these issues, there are two notable initiatives based in Chicago. The City Colleges of Chicago is a group of seven community colleges focused on building talent through formal degrees, while the Chicago Apprenticeship Network uses a combination of classroom learning and on-the-job training to fulfil the same aims. The Chicago Apprenticeship Network partners with community colleges, such as the City Colleges of Chicago, with the purpose of developing skills targeted to a range of middle-skilled jobs, such as roles in IT, insurance and cybersecurity. The college network aims to foster improvements in course retention and completion rates, shorten time to graduation, and ensure students can leverage the education they receive to pursue their own life goals.⁵⁰

The approach of both initiatives is explicitly student-focused, with an emphasis on developing skills that are work-ready and easily understood by employers. Within the City Colleges of Chicago, task forces composed of faculty, staff and students integrate and execute projects that support students' decision-making process through better information, and incentivize course completion and effective transitions into the workforce. Partnerships with industry experts in growing fields and alignment of the curriculum with

expectations of industry support the effective transition of students from college to work. The college network has partnered with 10 relevant industries, including Advanced Manufacturing, Healthcare and Construction Technology; identified 'college-to-career' routes across leading local employers; and utilized a blend of classroom learning and on-the-job training in apprenticeship programs.

In 2013, approximately 700 students secured employment through 'college-to-career' routes at the City Colleges of Chicago. As a result of these shifts, the college network has reported improvements in graduation rates and an update in enrolment relative to neighbouring states.⁵¹

Finland infuses skills acquisition and targets increased motivation for lifelong learning in the national education curriculum

Related to strategies: 1, 2, 8, 10

Despite being one of the most innovative and highly-ranked education systems globally, faced with demand for shifting competencies, Finland continues to focus its education reforms on furthering quality and equity.⁵² Recent reforms focused specifically on lifelong learning, with an emphasis on three pillars: knowledge, skills and motivation. Cross-functional skills and competencies were set to be embedded across every subject area, and while students were taught and assessed as part of that subject, the education they received also focused on broader skills such as critical thinking, learning to learn, digital fluency and entrepreneurship.

The principles that guide the new Finnish curriculum emphasizes the school as a learning community.⁵³ Multidisciplinary learning is encouraged by asking students to complete one module per academic year that combines the content of different subjects under a selected umbrella theme and a module that provides a context for developing cross-functional competencies.⁵⁴ Students are encouraged to apply their knowledge and skills to real-world phenomena, to deepen their understanding by exploring relationships and interconnectivity between various phenomena and their own lives and broader community.⁵⁵

Foundation for Young Australians shapes mindsets to enable successful transitions from school to employment among young people

Related to strategies: 1, 2, 5, 6, 8

The Foundation for Young Australians (FYA) aims to encourage ownership of future career trajectories and proactive skills development among young people. The foundation has published a series of toolkits and reports that detail necessary changes in mindset and skilling for young people. Through those publications, the FYA aims to shape the mindsets of educationalists and young people.

The FYA calls for a focus on a sub-section of cross-functional skills sometimes referred to as enterprise skills such as communication, project management, digital literacy and financial literacy, and for pedagogical methods focused on inquiry-based or experiential learning. ⁵⁶ It also emphasizes the successful adoption of a skill-focused approach in Singapore. The organization advocates for a range of new approaches to guiding young people from education

to employment across the Australian education system. The FYA places particular emphasis on the power of data to identify successful skilling objectives among young people. In particular it identifies seven job clusters and the skills associated with them, and proposes that young people still unsure in their career trajectories can gain focus by targeting such job clusters and the skills associated with them.

Burning Glass Technologies delivers job market analytics that empower labour market stakeholders

Related to strategies: 5, 8, 9

Burning Glass Technologies (BGT) uses advanced data analytics to distil information from job postings found across a broad range of sources. The organization is able to create granular and dynamic datasets mapping occupations against skills and qualifications, and provides local governments, educators and employers with the insights necessary for enhanced data-driven decisions based on tangible labour market insight about skills supply and demand.

Higher education institutions such as Lone Star College have used this new source of labour market data to ensure that the skills taught throughout the curriculum meet employer demand. Such efforts ensure successful transition for students from school into the labour market, and increase the efficiency of local labour markets.⁵⁷

BGT maintains a skills and occupation taxonomy mapped to the American O*NET taxonomy. Its Occupational Skills Framework, 58 clusters skills under three groupings: necessary, defining and distinguishing. Necessary skills are job-specific and form the foundation for what is required to perform the role. Defining skills are day-to-day skills that are needed to perform tasks and responsibilities successfully. Lastly, distinguishing skills are technical proficiencies that allow workers to differentiate themselves in the labour market.

Credential Engine: creating transparency in credentialing marketplace

Related to strategies: 2, 3, 6

Credential Engine is a US-based not-for-profit organization that provides greater credentialing transparency, empowering informed decision-making and increasing credential literacy within the US labour market. The Credential Engine is an outcome of the Credential Transparency Initiative and is supported by the Lumina Foundation, JP Morgan Chase & Co, the Microsoft Corporation and the Walmart Foundation.

Facing an expanding number and type of qualifications, the Credential Engine has set out to create more efficient means to log, compare and value existing credentials using new technologies. The Credential Engine is composed of a Registry and a Credential Transparency Description Language. The Registry houses the library of credentialing information the Description Language (CTDL) establishes a common language around credentialing. The Credential Engine has harmonized its model with other international standards.

A CTDL profile can include an array of information such as the author or certifying body and the complexity level of the certification. The profile only establishes a common nomenclature around credentials, clarifying information such as the competencies taught in certifications. The quality of a credential is separately defined by the credentialing bodies and quality assurance groups.

Coursera builds data-powered skills signals to increase equality of opportunity

Related to strateies: 3, 4, 6, 8

Coursera, a leading learning platform for higher education, applies machine learning across 38 million learners and 127 million enrolments to assess each learner's skill proficiency. Learners are able to identify and communicate what they already know and use that insight to plan further learning or orient themselves in the labour market. Coursera provides granular, transparent and near real-time signals of skill proficiency. Traditional resume and credential-based signals rarely meet this need.

To guide its measurement efforts, Coursera has developed a Skills Graph, which maps a hierarchy of over 40,000 skills to the content on the platform, as well as to the career trajectories, employers and, more broadly, industries that require them. In addition, there is a new tool, Skills Benchmarking, trained on data from Coursera's large learner and content base. Skills Benchmarking creates an individual and aggregate view of a workforce's core capabilities, empowering companies to identify and reward internal talent for their demonstrated skills. For example, Adobe Inc. has used Skills Benchmarking to assess internal talent, particularly among remote employees. Companies have also used the platform to identify potential talent. Yandex has used Skills Benchmarking to find and hire entry-level software engineers from among Coursera learners, with a special focus on identifying strong talent from non-traditional backgrounds.

European Qualifications Framework for lifelong learning

Related to strategies: 5, 6

The European Qualification Framework (EQF) is an instrument developed by the European Commission that aims to enhance the comparability of nearly all levels of national qualification frameworks across EU member countries. ⁵⁹ At its core, the EQF requires qualifications to make explicit the skills and knowledge that have been acquired, and advocates comparability of those competencies among European Union countries. ⁶⁰ It is the first regional reference framework ⁶¹ and is expected to play a key role in introducing greater labour market synergies across the Eurozone by enhancing a shared language around skills and a common prioritization of lifelong learning strategies.

EQF has been a catalyst in the development of a range of comprehensive national qualifications frameworks, and is linked to the majority of those frameworks in Europe. ⁶² In some countries, EQF has been used to integrate private sector qualifications into national qualification systems or has supported validation of nonformal and informal learning. ⁶³

JobGetter: using technology to optimize the talent management process and efficiently match jobseekers to work

Related to strategies: 5, 7

JobGetter offers a suite of recruitment and talent management services with a broad national focus on increasing workforce participation and sustainable recruitment practices in the Australian labour market. It draws on publicly available information and workforce analytics to generate transparency in the recruitment process, with an objective to improve unemployment and underemployment in the economy. Data and analysis of the national job market allows JobGetter to provide insights on skills demand and hiring trends, employability, as well as approaches to hiring. The service uses that base to provide bespoke, automated feedback to jobseekers in order to assist displaced employees in migrating to new roles, and has developed the functionality to pre-match candidates to roles. 64

JobGetter has built a database of 220,000 real-time data points that include titles, skills, qualifications and location, among others. The company measures job and skills demand across over 50 industry sectors and in over 9,000 roles throughout Australia.

The service has invested in a range of research and analysis to understand supply and demand across the labour market, such as a Workforce report on the Aged Care Industry targeted to predicting shortfall in the industry and strategies for improving retention and attraction, as well as an annual Job Seeker Survey that focuses on the most current job-seeking challenges.

Open Badge: an innovative way to recognize lifelong learning beyond formal credentialing systems

Related to strategies: 2, 3, 4, 6

Open Badge is an initiative by Mozilla that aims to create a badging system that can act, supplement or replace traditional certificates, and enable the portability of skills and knowledge. Anyone can issue a badge at any point in time against skills or knowledge gained. Individuals can gather those tokens of their qualifications across a range of contexts (tertiary education, on-the-job learning etc.) and at various stages of life.

Each badge communicates a qualification, skill or achievement by providing a visual symbol with verifiable data and evidence that can be shared digitally for employment and learning. However, to safeguard the value of each badge, requirements were defined for what a badge must represent for both issuers and earners. To verify a badge, an array of criteria must be met. These include the name of the issuing organization, the requirements to earn the badge, the criteria for assessment, issuance of the badge, and date of issuance, among others.⁶⁵

The initiative integrates a wide range of stakeholders with an aim to define and develop shared standards and advancing acceptance of badges broadly in the labour market. Mozilla is funded by the MacArthur Foundation. A Badge Alliance made up of 13 working groups guides the initiative. IMS Global Learning Consortium, a large community of educational institutions, suppliers and government organizations aiming to advance technology to scale

and improve education attainment and participation, leads the project and is tasked with driving adoption and portability.

There are now thousands of organizations that issue Open Badges, ⁶⁶ and there are many programmes that use Open Badges as a base, customizing approaches co-designed with specific institutions. For example, the Open Badge for Adult Education, cofunded by the Erasmus+ programme of the European Union, aims to create a portfolio of badges that includes a range of forward-looking cross-functional competencies. ⁶⁷

Ernst & Young prepares for the future of work through skills-based digital credentials

Related to strategies: 3, 4, 8

In the face of accelerated changes to jobs due to technological advances, EY implemented a programme in 2017 to change the processes and tools around career development and performance management. EY encourages employees towards a path of lifelong learning by recognizing the opportunity and value behind earning digital credentials in skills through their global program, EY Badges. The programme was developed as a vehicle to offer workers further insights into how they can develop and grow to remain relevant for the needs of tomorrow, and in tandem provides EY with an opportunity to build a more agile and flexible workforce model that has the capability to scale their global talent base faster and more effectively.⁶⁸

Using an online learning catalogue, employees earn EY Badges through internal achievement criteria structured into four levels of achievement. The entry level badge corresponds to learning completed while more advanced badges certify that employees have experience in applying that learning or that they have started to coach other professions in those skills. The badges then provide opportunities to further develop future-focused skills and be matched with relevant projects.⁶⁹

EY has equipped individuals with tools to foster success and democratize learning. However, building a learning catalogue is not sufficient. Incentivizing learning among employees is critical as employees face competing priorities and essential day-to-day tasks. This requires a change both among individuals need to be aware and prioritize learning while managers need to enable their employees to learn, even if the learning may not be directly related to their current role.⁷⁰

Starbucks and Arizona State University's EdPlus partner to scale blended online learning

Related to strategy: 4

In 2014 Starbucks launched the Starbucks Global Academy Plan in partnership with Arizona State University's EdPlus, offering online bachelor's degrees to eligible employees. Approximately 70% of their employees are students or aspiring students; however, only 50% of Americans who begin college typically complete their education, largely due to financial and work-life barriers. The Starbucks Global Academy provides opportunities to staff who want to keep out employment beyond front-of-house responsibilities in the hospitality sector in their future careers.⁷¹

The courses are provided in a digital format and allow the company to scale the offering for the business. The online curriculum gives employees the flexibility to integrate learning into a busy schedule. The more easily accessible path of beginning and pursing learning goals is complemented with incentives and support for the more challenging aspect—completion. These range from concrete, quantitative incentives to human-centric support to tackle the common issue of low retention and completion rates for online courses. The inancial aid is provided when credits are completed. Learners are equipped with individualized guidance to support them in their journey, including enrolment counsellors, financial aid advisors, academic advisors and success coaches who help connect individuals with university resources to troubleshoot problems.

MIT Digital Certifications Project pilots new approaches to storing and verifying certificates

Related to strategies: 3, 4, 6

The current, mostly analogue, system of issuing, storing and verifying certification is not efficient—it can be slow, complicated and unreliable. In adult training, many certification initiatives exist with little harmonization. The outdated technologies that dominate traditional certification systems entail limitations in verifying certificates and making certificates portable across borders. The MIT Digital Certifications Project aims to tackle these limitations. ⁷⁴ To create a more transparent and easily verifiable system, MIT Media Lab released in 2016 the first version of a set of tools to issue, display and verify digital credentials using distributed ledger technology and Open Badges specifications.

While such approaches hold much potential, there are certain limitations that were identified through this initial pilot. The most critical ones are privacy, curation of one's experience and lack of markers for the actual value of accrued certificates. The inherent nature of blockchain will allow complete transparency of the content, meaning the track record of past learning cannot be erased. However, further safeguards can empower individuals to protect their privacy. Curation of certifications and experience is typically a feature of seeking employment. Questions remain on how blockchain certification systems can allow for this type of curation. And lastly, a shared understanding of the value of certifications will empower individuals on career management.⁷⁵ The project seeks to work with corporations and enterprises to address many of the obstacles outlined earlier in this paper in creating transparency between and within sectors on skills qualifications and valuing accomplishments to enhance portability and mobility.

MIT: Skillscape explores skills transferability⁷⁶

Related to strategies: 5, 7

The MIT Media Lab constructed the Skillscape portal to house an analysis of the connections between jobs on the basis of skills requirements. Skillscape highlights opportunities for job mobility and skills complementarity across roles in the US labour market. The analysis, based on data from the US Department of Labour, shows the relevance of different skills across occupations, as well as the likelihood that skills are typically required together—identifying skill connection and therefore 'bundles of skills'. The

analysis highlights two general categories of skills: sensory-physical and socio-cognitive. These skills are more likely to be respectively employed in jobs that are associated with lower and higher income households, as well as with lower and higher educational outcomes. The resulting visualization of the network of skills shows the polarization of sensory-physical skills and socio-cognitive skills in the labour market and highlights that skill polarization underlies job polarization. The analysis found that the bipolar nature of the current skills landscape suggests significant challenges in the transition from lower paying jobs to higher paying jobs

The Skillscape analysis and data portal indicate the deeper understanding of the jobs and skills landscape that should be the prerequisite in designing training programmes aimed at upskilling individuals across the labour market.

General Assembly's Standards Boards aim to inject more transparency into the skills content of jobs by mapping skills and career pathways

Related to strategies: 4, 5, 8

General Assembly, a global education technology company recently acquired by The Adecco Group, offers a variety of skill development opportunities—online, full-time, and parttime. General Assembly provides tools that can support faster recruitment in roles with shifting skills requirements. These tools provide greater transparency into the skills required for a range of roles and into career progression pathways in changing professions. A key instrument for those efforts are Standards Boards tailored to expertise within specific professions. The Standards Boards bring together experts who are able to define and validate skills requirements across a set of in-demand roles and identify career progression opportunities. The issues facing each Standards Board vary. For example, the Data Scientists Standards Board was created to infuse transparency and add specificity in what it means to be a Data Scientist, as the job label is currently nebulous, creating inefficiencies in matching skills required to jobs.⁷⁷ The Marketing Standards Board aims to create transparency about skills demand shifts and broaden the related skills from the narrow tactical focus it has today to a much-needed blend of skills to solve complex problems that span across more than one specialized domain.⁷⁸

These career frameworks outline foundational skills, skills in specialized areas and leadership skills. The frameworks are broad and highlight the skills for entry-, mid-, and leadership levels, as well as opportunities that can be pursued. Each framework helps employers pinpoint the level of candidates and skills needed without relying on resumes. In parallel, individuals are empowered with a clear understanding of potential career paths and a map which defines skill requirements. General Assembly provides tailored services to individual companies, but also shares these frameworks publicly to support the development of a 'common language' for specific professions.

JD: embraces technological advances and adapts changing job requirements and skills⁷⁹

Related to strategy: 7, 10

JD is a Chinese retailer with significant e-commerce logistics. The operation of infrastructure networks, logistics, sourcing and customer service are pivotal to ensuring JD's unique value proposition. New technologies are offering fresh opportunities to manage operational complexity and increase operational efficiency. JD has designed a programme, Project Z, to create insights about emerging technologies and in-demand skills, as well as to monitor and forecast the resulting requirements on talent needs and working models. Project Z has set in place a practice of categorizing technological advances that are set to be adopted across JD's operations according to their speed of arrival and potential impact on work. In this initiative the impact of technological adoption on jobs is mapped and work responsibilities are reclassified. In some cases, new roles are created while in others, jobs are reinvented with a new set of required skills. Employees are provided with upskilling pathways coordinated to those new roles. In cases where rapid technological expansion has led to significant role augmentation and is set to have a large impact on the workforce, JD has developed and implemented comprehensive skill enhancement plans. In other cases where there has been rapid role automation but only a small impact on the workforce, JD designed new job levels and career development paths.

AT&T: Reskills its workforce with a focus on emerging jobs and interchangeable skills⁸⁰

Related to strategy: 7

AT&T redesigning its approach to talent as a means to adapt to the accelerating changes to jobs brought about by technological advances. A programme entitled Workforce 2020 (WF2020) sets out to reskill the workforce for newly created roles, with a focus on instituting a culture of lifelong learning, enhancing job mobility and developing skills with a focus on those skills that are interchangable. A new career profile tool showcases relevant insights about potential career development trajectories for workers, highlighting new-job requirements and relevant reskilling opportunities. Through the portal employees are provided with better transparency on the internal job and skills market and the range of possible career trajectories within AT&T. The programme is not limited to providing information on potential career trajectories but complements those insights with relevant reskilling opportunities, online courses comprised of both shortcycle duration (nano) degrees as well as longer-cycle reskilling opportunities (online masters programmes). AT&T worked in partnership with online learning providers such as Udacity to create relevant course materials and design appropriate pay plans.

Infosys promotes a culture of lifelong learning to adapt business strategy to changing market needs and fuel growth

Related to strategies: 3, 7, 10

Infosys is an IT consulting firm headquartered in India which has focused on coupling changes in business strategy with mechanisms for developing an agile workforce through a culture of

lifelong learning. That culture is supported by strong support from the management team and by appropriate investment in reskilling and upskilling opportunities for learners.81 With changing client needs, and a workforce that will be augmented by automation, Infosys faces a need to expand its talent base, developing a broader range of niche and emerging skills.82 Infosys has made financial investments in continuing education to fill both the shortand long-term skills need, co-developed learning programs with both Purdue University and Cornell University, and taken advantage of the benefits of MOOCs and its learning centre in Mysore. Infosys has built in-house tools that incentivize employees to learn critical skills and enhance an appetite for lifelong learning. Infosys's efforts are complemented by a skills map that identifies not just foundational skills for IT enterprises but also requirements for emerging skills and the connection between different skills, namely relevant skills bundles. One notable change in Infosys' approach to skills has been to conduct an extensive review of its future service delivery and subsequent shift from process-oriented skills requirements to a complex mix of both cognitive and 'soft' skills. As part of this change, Infosys has trained half of its 200,000-strong employee population on design thinking—which is now its core capability around improved problem-solving.

Nesta builds a data-driven skills taxonomy for the UK Related to strategy: 9

To address the need to have a more concrete and consistent method of measuring skills shortages in the UK, Nesta developed a data-driven skills taxonomy of the UK which signals real-time jobs and skills information to stakeholders across the labour market. Nesta partnered with Labour Market Information firm Burning Glass Technologies to identify 10,500 unique skills and used machine learning to group those skills into hierarchical clusters on the basis of the frequency with which two skills appeared together. The resulting skills taxonomy has three layers and six clusters of broad skills based on occupational groups. These in turn can be further organized into 143 clusters of specific skills. The demand for each skill cluster was indicated by the number of times it appeared in job advertisements. Nesta has provided evidence that this taxonomy can be valuable in comparing skills demand among employers to current skill supply among workers and the potential skills supply that will result from courses and learning programmes, demonstrating how such accepted methods of grouping skills in a taxonomy will enable a coordinated approach to measure skills supply and demand. 83

Data at Work develops a consistent language around skills and a framework to improve the skills data ecosystem in the US

Related to strategy: 9

Data at Work, a University of Chicago-led initiative, aims to enhance labour market information. The approach promotes collaboration with major stakeholders, transparency, simplicity, web orientation, and a focus on reusing and integrating existing tools, and is independent of any existing tool or project. By offering

open data and open-source tools, Data at Work hopes to inject fluidity and consistency into getting, sharing and validating labour market information. The aim is so that labour market stakeholders can benefit from the wealth of data and services available on skills, jobs, and training.

At the heart of Data at Work is the Open Skills Project, which is dedicated to improving machine learning algorithms for translating workforce data. The project includes a national taxonomy of skills and jobs in the US developed through private-public collaboration. It is a normalized taxonomy that expands on O*NET data and enables more consistent and granular language around skills for labour market stakeholders. The taxonomy is available for use through Skills-ML. As an open-source library of code to extract and analyse skills and competencies from text, Skills-ML can be used by developers when building applications to identify, relate and translate competencies. For example, it can be used to extract the skills and competencies in a set of unstructured job postings. An applicant can find the competencies that are currently not covered by their occupation and that will be needed in their desired job(s).⁸⁴

The project has seen much interest and has developed partnerships focused on research and development, data cooperation, and software and data users. These partners span government, business and education. At the end of 2018, active work was transferred to the T3 Innovation Network, a network of over 150 participating organizations launched by the US Chamber of Commerce Foundation and the Lumina Foundation. The network has eight guiding principles, including fostering open collaboration and utilizing open competency frameworks, taxonomies, and ontologies to improve development and comparison of competencies. The network has also established four working groups, one of which has created next steps that include developing a pathway for applications across the talent marketplace to exchange data with full data harmonization. 85

SkillsFuture, Singapore transforms delivery of services and collaboration between the public and private sector to ensure sustainable workforce development

Related to strategies: 5, 10

In the ongoing planning for the development of its economy, Singapore is designing a flexible labour market through the measurement of emerging skills and definition of reskilling pathways as a means to increase the visibility of individuals within the labour market who hold relevant skills, as well as to identify developmental opportunities for workers. At the end of 2015, the country set up the Committee on the Future Economy to investigate future areas of growth and job creation, as well as support companies' workforce planning efforts. It is committed to keeping the labour market flexible, tight and responsive to changes.

A statutory board governed by the Ministry of Education— SkillsFuture Singapore—drives and coordinates the implementation of the national SkillsFuture movement, promotes a culture and holistic system of lifelong learning through the pursuit of skills mastery, and works to strengthen the ecosystem of quality education and training throughout the country. At the intersection of jobs and skills are the Ministry of Manpower and its statutory board, Workforce Singapore, which match individuals with the right skills to the right jobs. SkillsFuture Singapore leverages Industry Transformation Maps, created as part of the Future Economy Initiative, and partners with corresponding agencies, sectoral representatives and professional service firms to co-create Skills Frameworks that are industry-relevant.

SkillsFuture Singapore is supported by numerous initiatives, with a specific focus on employers and training providers, as well as individuals across different life stages.⁸⁶

ESCOs creates a common language between European countries

Related to strategies: 5, 9

In response to the need to meet the challenges presented by large-scale changes to jobs, the European Commission has developed a new framework, European Skills, Competences, Qualifications and Occupations (ESCO)—a multilingual digital tool to connect people with jobs across Europe. It is a classification language designed to enhance transparency, mobility and the collection and exchange of data between stakeholder groups in the European labour market.

ESCO is organized under three interconnected pillars—skills, occupations and qualifications. The skills pillar includes 13,485 elements categorized under knowledge, skills and competencies. Skills are defined as the means to use a method or instrument in a setting, while competence is defined as the ability of a person to use and apply knowledge and skills. For each skill, knowledge or competency, the database provides definitions of their scope, and differentiates between transversal, cross-sector, sector-specific or occupation-specific entities. This same language is linked to occupational classifications of 2,942 sets of jobs whose main tasks and duties are characterized by a high degree of similarity.

Conclusion

The education and learning systems of today have helped empower the expansion of the middle class across a number of developed and developing economies. But they lack the features to achieve the scale and speed needed in the new world of work. In the midst of the 4IR, which is characterized by swift and unexpected change across economies and labour markets, a new shared vision for talent is needed to ensure current and future social mobility.

Closer collaboration between individuals, educationalists, education innovators, policy-makers, and businesses can introduce greater efficiency and allow for the scaling of reand upskilling efforts. A programme of updating work, talent frameworks and certifications, with a focus on skills as the core currency of the labour market, has the potential for wide-ranging positive consequences on how we learn and earn, with positive repercussions for business, individuals, economies and societies. The ten strategies outlined in this white paper identify a range of efforts that will be critical to effecting systemic change. We invite a broad range of stakeholders to join the Forum platform to generate new ideas, share best practices and collaborate for action.

Notes

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To learn more about the System Initiative, please refer to the System Initiative website: https://www.weforum.org/system-initiatives/shaping-the-future-of-education-gender-and-work.

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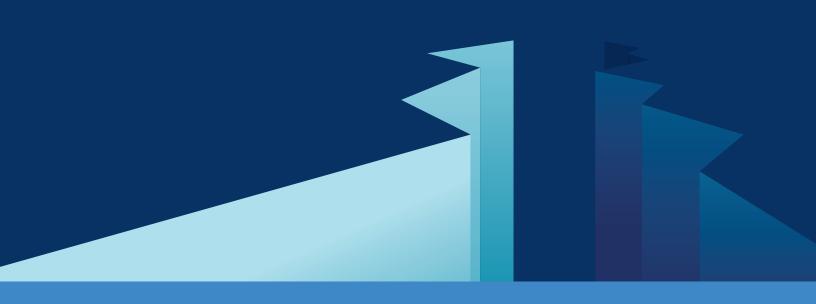
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THE GLOBAL SKILLS SHORTAGE

Bridging the Talent Gap with Education, Training and Sourcing





INTRODUCTION

The United States is facing a growing skills gap that threatens the nation's long-term economic prosperity. The workforce simply does not have enough workers and skilled candidates to fill an ever-increasing number of high-skilled jobs.

7 million jobs were open in December 2018, but only **6.3 million** unemployed people were looking for work. As the country nears full employment, businesses face an even greater talent shortage that will have a stifling impact on the economy and global innovation.

Business and HR leaders view the skills shortage as a top concern that needs to be addressed. Among HR professionals, **75**% of those having recruiting difficulty say there is a shortage of skills in candidates for job openings.

Until now, little has been known about how businesses are addressing the skills gap or whether there are effective remedies.

Our research shows that employers are making efforts. They are investing in employee training, hiring from more diverse pools of talent and collaborating with educational institutions.

But they also say more progress is urgently needed.

The skills gap presents HR professionals with an opportunity to better understand the needs of their organizations and strategize remedies.

This will require increasing worker training and education, closely collaborating with educational institutions to improve graduate employability, and supplementing the existing workforce with foreign-born talent.

The study described in this report begins the exploration of the skills gap. To supplement these preliminary findings, SHRM will be conducting robust additional studies in 2019 and beyond.

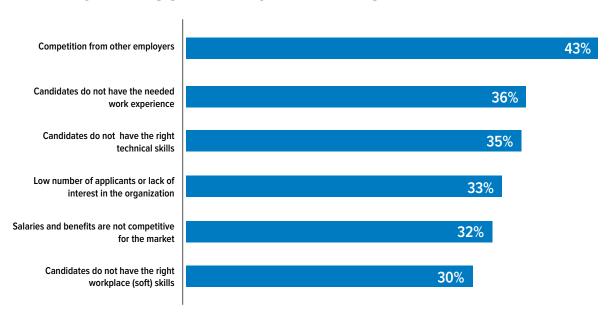
IN A TIGHT TALENT MARKET WITH LOW UNEMPLOYMENT AND HIGH COMPETITION, TALENT ACQUISITION IS

GETTING MORE DIFFICULT

OF RESPONDENTS HAVE HAD TROUBLE RECRUITING SUITABLE CANDIDATES IN THE PAST 12 MONTHS.

Over **one-third** report a decrease in applicant quality across the board, and **45%** report a decrease in quality for specific positions.

TOP REASONS ORGANIZATIONS ARE STRUGGLING TO HIRE SUITABLE CANDIDATES



SO WHAT SKILLS ARE

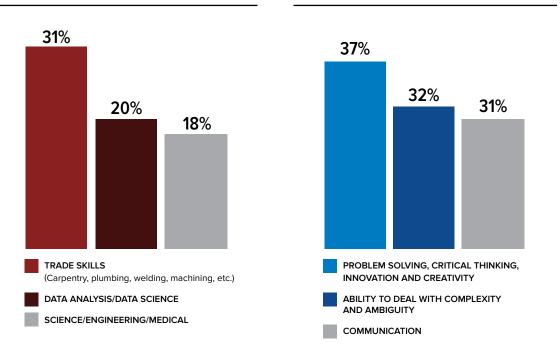
MISSING?

OF THOSE HAVING DIFFICULTY RECRUITING BELIEVE THERE IS A SKILLS SHORTAGE AMONG THEIR APPLICANTS.

However, some skills are more frequently reported as being missing than others. Generally, respondents feel that applicants lack technical skills (those associated with specific knowledge and training) more so than workplace or "soft" skills that are necessary regardless of industry or job type.

TOP 3 MISSING TECHNICAL SKILLS

TOP 3 MISSING SOFT SKILLS



The skills gap isn't going away or fixing itself—over 50% of respondents feel that skills shortages have worsened or greatly worsened in their organizations in the last two years. Less than 10% of respondents report skills shortage improvements.

HOW ORGANIZATIONS ARE

BRIDGING THE SKILLS GAP

Many organizations are taking steps to address the skills gap and maintain a high-quality workforce, but are they taking the right steps? Not every remedy to the skills shortage is effective, and even those that are highly effective for some positions aren't right for all difficult-to-fill positions.

MOST COMMON **REMEDIES**

- Expanding advertising efforts (e.g., using social media, expanding search regions)
- Collaborating with educational institutions to build talent pipelines
- Outsourcing recruiting efforts (e.g., using a third-party staffing agency)
- Training internal employees to take on hard-to-fill positions
- Increasing compensation
- Improving retention efforts for current employees

MOST EFFECTIVE

REMEDIES

- Providing onsite training to employees (e.g., seminars, training programs)
- Starting/expanding training programs to help improve skills of new hires
- Hiring external workforce (e.g., temps, independent contractors)
- Increasing compensation
- Improving retention efforts for current employees

While not appropriate for every organization or position, some employers find alternative candidate sources an effective remedy, including:









WHAT ELSE NEEDS TO BE

DONE?

Employers can't solve the skills gap issue alone; they need support from education systems to build talent pools with skills relevant to today's business needs. While some organizations have worked directly with education partners to build talent pipelines, most are reliant upon education systems identifying and developing the needed skills of the future workforce on their own.

OF RESPONDENTS SAY EDUCATION SYSTEMS HAVE DONE LITTLE OR NOTHING TO HELP ADDRESS THE SKILLS SHORTAGE ISSUE.

More work needs to be done by organizations and education systems to ensure that the U.S. workforce is prepared for the future of work.

Based on open-ended responses, HR professionals feel candidates are lacking some skills that are shared by all education systems:



PROFESSIONALISM



BUSINESS ACUMEN



CRITICAL THINKING



LIFFLONG LEARNING

WHICH EDUCATION SYSTEM IS BEST **POSITIONED TO ADDRESS THE SKILLS GAP?**

It depends who you ask:

Industries like manufacturing and construction rely mostly on vocational education systems to provide workers with the skills they need.

Industries like high-tech and professional/ scientific/technical services rely mostly on higher education to develop their workforce.

PROJECT TEAM

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METHODOLOGY NOTE

Twenty thousand U.S.-based SHRM—Society for Human Resource Management—members were invited by e-mail to participate in this survey, which was fielded September 12-26, 2018. Of those, 1,028 participated, yielding a response rate of approximately 5%.

The number of respondents varies from one finding to another as some respondents did not answer all of the questions. Individuals may not have responded to a question on the survey because the question or some of its parts were not applicable or because they did not know the answer, thus the varying number of responses to different items.

As with any research, readers should exercise caution when generalizing results and should take individual circumstances and experiences into consideration when making decisions based on these data. Although SHRM is confident in its research, it is prudent to understand that the results presented in this survey report are only truly representative of the sample of HR professionals responding to the survey.



EDUCATIONAL CREDENTIALS COME

OFAGE A Survey on the Use and Value of Educational Credentials in Hiring

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December 2018



Northeastern University **Center for the Future of Higher Education and Talent Strategy**

Educational Credentials Come of Age – Background and Overview

As key hiring qualifications, the educational credentials issued by colleges and universities play a central role in the job market.¹ This valuable role is taking on added importance in a historically tight job market that is near full employment, and in a time when talent strategy has emerged as a top corporate priority.² Against this backdrop, globally recognized HR expert Josh Bersin of Deloitte has argued that hiring practices are evolving at the fastest pace in decades – shaped by competitive forces, new technology platforms, and the application of data analytics.³

Postsecondary education is in a period of transformation as well. The last decade has seen significant innovation and experimentation – including the continued growth of online learning, the development and launch of numerous new forms of "microcredentials," and the rise of new non-institutional educational providers.⁴ With college costs rising, many different parties have called into question the value of traditional academic degrees – and this is amplified by falling public confidence in higher education.⁵ Over the last few years, scores of new initiatives, start-ups, and government policies have explored the development of alternatives to traditional college degree attainment, including microcredentialing.⁶

Unfortunately, understanding the value of educational credentials in hiring has historically been an understudied area. Even more specifically, there is little contemporary data to rely on when it comes to analyzing how employers are interpreting new forms of educational credentials; hiring leaders' perceptions of online learning; and documenting shifts in hiring policies and practices during this fast-changing time. Real-time labor market information, salary and earnings data, and anecdotes from Fortune 500 employers are all needed and useful measures of the "value" of educational credentials in hiring – but truly understanding how this market is evolving revolves around strategic questions about employers' perceptions, policies, and practices.

Center Mission

By studying trends and pioneering and testing next-generation learning models, Northeastern's *Center for the Future of Higher Education & Talent Strategy* seeks to improve and optimize the interaction between the postsecondary education system and employers – thus improving outcomes for students, institutions, and the economy and society at large.

Drawing on the expertise of Northeastern faculty and affiliated industry-based scholars, the center's analysis focuses on bringing the voice and perspective of employers into the higher education community, while also serving as a research-based academic voice and resource in the world of corporate learning and talent strategy.

For this reason, Northeastern University's Center for the Future of Higher Education and Talent Strategy designed and executed a unique national research survey of 750 human resources (HR) leaders at U.S. employers, spanning all industry sectors and organizational sizes. This project is one of the center's inaugural studies related to understanding the future of educational credentials and their value and use in the workplace - a core research theme. A profile of the survey sample and methodology is included at the end of this report.

The top-line findings discussed in the analysis that follows provide insights on critical questions such as how the value of various educational credentials is evolving; how rapidly skills-based hiring approaches are being pursued; how online degrees and microcredentials are perceived; what hiring leaders view as the key signals of quality; and what the viability of various new credential constructs and degree alternatives is. These perspectives from the employer community can influence the strategies of postsecondary institutions, policymakers, educational technology companies, employers themselves, and other stakeholders in the ecosystem.

key findings

- **Among the study's** The relative value of educational credentials in hiring has held steady (29%) or increased (48%) for most employers over the last five years
 - Nearly half of employers (44%) report that they have increased the level of education preferred or required for the same job roles over the last five years - often due to increased skills demands for these jobs, as well as increased supply in the market
 - A majority of HR leaders (64%) believe that in the future, the need for continuous lifelong learning will demand higher levels of education and more credentials - and 52% believe that in the future, most advanced degrees will be completed online
 - Skills-based or competency-based hiring appears to be gaining significant interest and momentum, with a majority of HR leaders reporting either having a formal effort to deemphasize degrees and prioritize skills underway (23%) or actively exploring and considering this direction (39%)
 - Online credentials are now mainstream, with a solid majority (61%) of HR leaders believing that credentials earned online are of generally equal quality to those completed in-person, up from lower percentages in years past
 - Employer awareness and experience with candidates who hold non-degree "microcredentials" is still relatively low - but this is evolving rapidly in a growing market shaped by MOOCs and new credential offerings. Microcredentials are typically serving as supplements rather than substitutes for traditional degrees
 - Work-integrated learning and curriculum that is industry-aligned and employer-validated are highly prioritized by employers as indicators of credential quality
 - · In the years ahead, pre-hire assessment, talent analytics, microcredentialing, and other innovations in hiring and credentialing are poised to challenge - in various ways and at different paces - the historical emphasis on college degrees in hiring

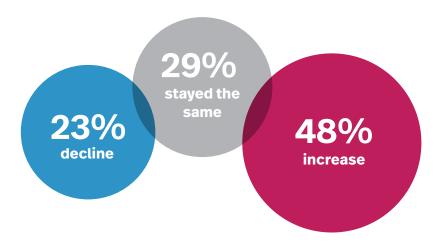
The Relative Value of Educational Credentials in Hiring Has Held Steady or Increased for Most Employers Over The Last 5 Years

As evidence and signals of knowledge, skills, and ability, educational credentials such as degrees have long served as central hiring qualifications, alongside work experience. However, in recent years, many parties have posited that the value of educational credentials might be declining given a highly competitive market for professional talent, the rise of alternatives to traditional college study, and an increase in the supply of college graduates.

As indicated in Figure 1 below, a majority of surveyed HR leaders reports that relative to other job qualifications, the value of educational credentials in hiring has either increased (48%) or stayed the same (29%) compared to five years ago.

Figure 1. Change in Value of Educational Credentials in Hiring vs. 5 Years Ago

Compared to 5 years ago, has there been any change in how your organization values educational credentials alongside other job qualifications?"



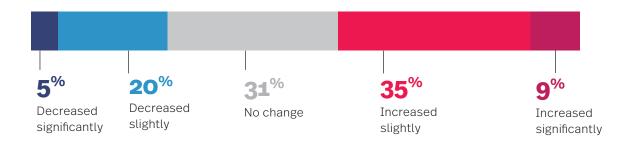
The fact that the balance of employers reports an increase or no change in the value of educational credentials appears consistent with hiring demand and salary data – despite the common narrative that educational credentials matter less in today's market.⁹

At the same time, however, it's important to remember that educational credentials are often a proxy for ability in a complicated and often subjective equation that balances education and experience. Consistent with historical research, 60% of employers agree that "years of experience are generally valued more than educational qualifications" – and 74% confirmed that years of experience can often substitute for a lack of preferred or required credential. Hiring decisions are principally about competency, and the relationship between educational qualifications and experience requirements is often fluid.

A majority of respondents (54%) agrees that degrees are "fairly reliable representations of a candidates' skills and knowledge," and an even stronger majority (76%) agrees that degree completion is a "valuable signal of perseverance and self direction."

In the ongoing and important debate about credential inflation, it is also worth noting that survey respondents reported that the level of education preferred or required *for the same job roles* at their organization has typically either increased (44%) or stayed the same (31%) over the last 5 years.

Figure 2. Change in Educational Qualifications Required or Preferred for the Same Job Roles





of employers believe "the need for continuous lifelong learning will demand higher levels of education and more credentials" Significantly, among the employers who reported that educational qualifications had increased, a majority (63%) indicated that this was because the skills needed for these jobs had evolved. A similar share of all respondents believes that the need for continuous lifelong learning will demand higher levels of education and more credentials in the future.

At the same time, half (51%) of employers who had increased their preferred educational qualifications also reported that qualifications had increased because they can demand higher levels of education based on the supply of graduates in the market. This suggests that the escalation of preferred educational qualifications for the same jobs – often debated in education and economics circles – is likely driven by a *combination* of both skills-biased technological change and credential inflation.

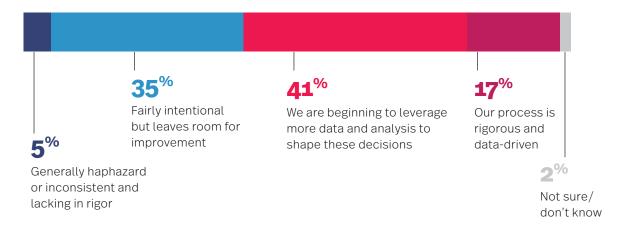
It is clear that educational credentials – typically degrees – retain a central and even growing role in the hiring equation. Yet, as more employers evolve their hiring practices through the application of technology and skills-based hiring practices, the emphasis on degrees is likely to be challenged.

The Rise of Talent Analytics and Skills-Based Hiring

Previous research has suggested that employers' policies and processes for setting the educational requirements for job roles is often not optimized.¹⁰ Some firms' policies and approaches are carefully calibrated and data-driven – while others' are inconsistent or based on gut instinct.

When asked about their organization's approach to determining/setting the educational qualifications preferred or required for job openings, a strong majority of employers report that their process is fairly intentional but has room for improvement (35%) or that they are beginning to leverage more data and analysis to shape these decisions (41%). Only 17% of respondents characterize their process as "rigorous and data-driven."

Figure 3. How HR Leaders Characterize Their Approach to Determining/Setting Educational Qualifications



Although this characterization concerns only the setting of educational qualifications, it is worth noting that only about 30% of HR departments in 2018 have a person or team dedicated to some type of analytics (up from 10% a few years ago), according to research from Bersin by Deloitte.¹¹ As data and analytics are applied to HR generally – and the setting of educational qualifications in hiring specifically – many organizations are likely to adapt their preferences and demand for educational credentials.¹² One area in which the application of technology and the desire to bring rigor to setting job qualifications is manifesting itself is the rise of "skills-based" or "competency-based" hiring.

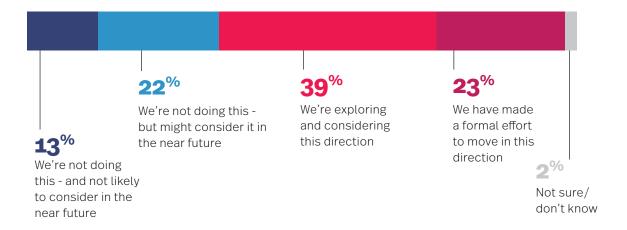
Momentum for Skills-Based Hiring

In a historically tight job market, many employers have begun to re-evaluate their hiring and recruitment processes and embrace skills-based hiring strategies that de-emphasize degrees and pedigree.¹³ Often enabled by technology, this still early but growing practice is also being advocated and pursued for equity and inclusion reasons – and may indeed transform employers' historical reliance on degrees and educational credentials in hiring.

A growing group of employers, non-profits, foundations, and technology firms are championing skills-based hiring and providing the tools to support it – with key examples including IBM's "New Collar Jobs" effort, Skillful, Opportunity@Work, Lumina Foundation, and the U.S. Chamber of Commerce's Talent Pipeline Management Initiative, among many others.¹⁴

To gauge the momentum and interest in this emerging approach, a survey question found that 23% of organizations say they have already made a formal effort to move in this direction – while another 39% report that they are exploring or considering it.

Figure 4. Extent to Which Organizations Have Formal Skills-Based Hiring Initiatives Underway or Are Considering a Strategy That De-Emphasizes Degrees and Prioritizes Skills



This is a potentially significant development for the higher education and talent ecosystem as it suggests a future landscape where the traditional role of degrees in hiring will be reshaped by analytics and more rigorous job design and hiring practices. Moving in this direction will of course rely on and create the opportunity to develop new tools, as well as require further study.

Online Credentials Now Mainstream – Entering a Transformative Phase in Online Education's Lifecycle

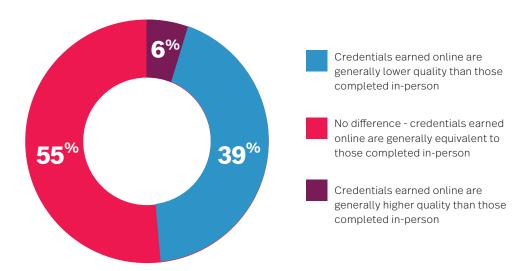
The online delivery of degrees is one of the most significant innovations in higher education over the last 20 years. Online education now accounts for 16% of all higher education enrollment in the U.S., at 3.1 million students. As online degree attainment has become more common, employer perception has been continuously evolving. In the early days, online degrees were often stigmatized by employers and associated with "online schools" in a market dominated by for-profit universities. Today's online education landscape includes thousands of degree and certificate offerings from colleges of all types – including many of the world's most well-known and prestigious institutions.

Historically, there has been relatively little data available on employers' perception of online credentials. However, based on a variety of academic research projects and spot surveys over the years, it is clear that employer acceptance of credentials earned online has been slowly and steadily increasing. For example, a poll of HR professionals by the Society for Human Resource Management (SHRM) in 2010 found that just 34% of hiring leaders viewed online degrees favorably at that time. Northeastern University's national surveying of hiring leaders found that favorability toward online degrees had grown to 40% in 2013, and 48% by 2014. Given online education's continued growth in recent years – and the evolution of the offerings and institutions engaged – it is especially useful to have a contemporary sense of employer perception about the "quality" of online education.

As of 2018, a solid majority of HR leaders – 61% – believes that credentials earned online are of generally equal quality to those completed in-person, as described in the figure below



Figure 5. Perception of Quality for Credentials Earned Online



71%

of HR leaders have personally hired someone with a degree or credential completed online The increase in the perceived quality of online credentials is driven by a variety of factors – including the fact that each year, millions more Americans are completing credentials online, and as a result, this once novel mode of educational attainment is something HR leaders have encountered or experienced more often. 71% report that they have personally hired someone who holds a degree or credential completed online. Yet, it is also notable that for well over one-third of employers (39%), the notion that online credentials are second-class still remains. Note that the use of the term "credential" in this question (rather than degree) was deliberate, to be purposefully inclusive of non-degree credentials.

Given the dynamic nature of online education, it is important to further explore the drivers behind HR leaders' evolving perceptions of quality. The selected, illustrative responses in the figure below – surfaced via an open-ended question – add color and nuance to our understanding about HR leaders' comparisons between online and "traditional" credentials. Common themes, for example, include HR leaders' own personal experience with online learning; the signaling value of traditional degrees and campus-based educational experiences; as well as the increasing inability to distinguish whether or not a credential was earned online.



Figure 6. Qualitative Explanations of Perceptions about Online Credentials



I have done both and can honestly say the online degree was actually more demanding than the in classroom was. It takes a self-motivated and determined individual to earn an online degree.

Of the hires we have made there has been no distinguishable difference between the two.

I earned my M.S. entirely online so I know it's a credible way of doing so.

Online education often requires a greater level of persistence on the part of a candidate than attendance for a face-to-face class. Online is now how a large part of our work is done. Why should education be different?

Online courses, if taken through a reputable university, are just as valid as a degree earned on campus. Often you don't even know if it's an online degree if it's not earned through a for-profit school.

I suppose I'm old fashioned in this, but I believe that the physical presence of a school and professors hold the student/learner to a higher standard.

Online classes do not allow for the in-person collaboration and project work with fellow classmates. There is a deeper grasp of concept and learning when it is done face-to-face.

While I think there is much in favor of online degrees, it is not black or white. Some are far superior in earning an online degree, but it is still a newer way of getting an education. This is something that has to truly be researched.

There have been several nontraditional schools that have provided courses and degrees without being accredited. It seems like there are online schools that will give anyone a degree if they pay enough.

CONS ??



These types of perceptions and value judgments were further explored in other questions, finding:

58%

believe that an institution's brand/reputation is a main driver of a credentials' value, regardless of whether a credential was earned online

57%

say their organizations would favor "hybrid" or blended programs that include an in-person component, over online-only programs

45%

are skeptical about the amount it work it takes to complete a credential online

33%

believe that enabled by technology, online education will ultimately be *better* than traditional face-to-face instruction

14%

report that they would "never" hire someone with an online degree

52%

believe that in the future most advanced degrees will be completed online

The Evolution of Online Education and the Unbundling of Traditional Models

The very idea of what "online education" entails has been evolving rapidly since the arrival of massively open online courses (MOOCs), and even more so recently with the launch and growth of MOOC-based degree offerings. MOOCs brought some of the world's most prestigious institutions into the online education market – but simultaneously have introduced questions about the level of rigor, assessment, and instructor interaction associated with an online credential. Some of higher education's core constructs – such as 1:1 engagement with faculty, and the delineation between academic credit and non-credit learning – are now being experimented with and refashioned in new models. Given these new ways of constructing and delivering online programs, it is therefore useful explore how important various factors are to employers in shaping the perceived quality and value of online credentials.

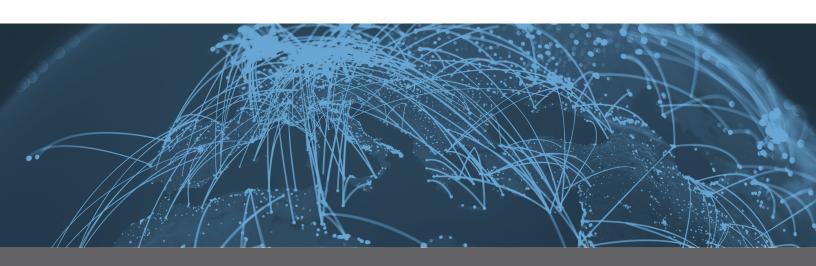
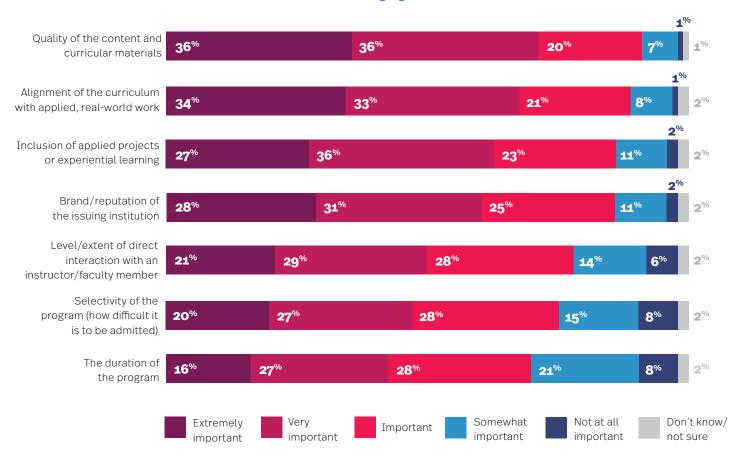


Figure 7. Importance of Various Factors in Determining Quality and Value of Online Credentials as Hiring Signals

How important are the following factors when you are determining the quality or value of an online credential as a hiring signal?



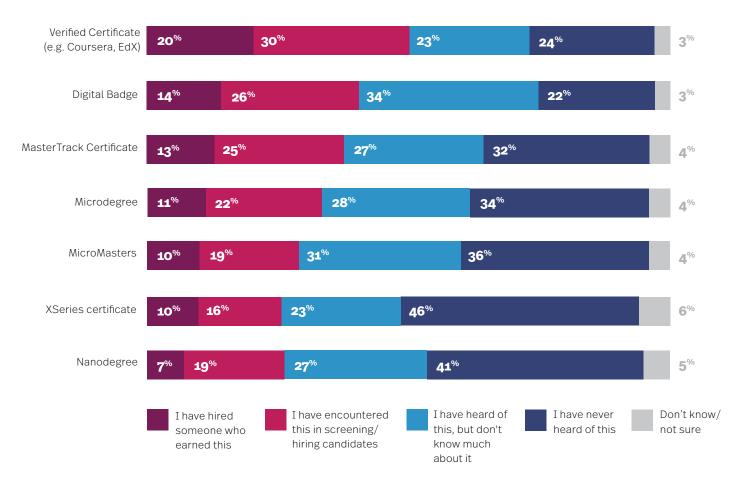
While all of these factors are clearly "important" to varying extents, it is interesting that the quality of content/curricular materials and alignment with real-world work are reported as the factors given the greatest weight. It is also clear that brand/reputation matters – and that the level/extent of faculty interaction remains an important dynamic.

Relatively speaking, selectivity in admissions is lower on the list, as well as program duration. These responses suggest that the drivers of perceived value and quality are nuanced – and that the market may be slowly evolving from one that prioritizes long programs with selective admissions (the traditional higher ed model) to one that places more value on work alignment and application and outcomes. This is precisely the value proposition of microcredentials – addressed in the section that follows.

Growing Awareness of Microcredentials – and the Perceived Hallmarks of Quality

The growth of online education has spawned a variety of new "microcredentials" – short-form, sub-degree awards that represent the completion of a learning module, course, or series of courses. Microcredentials include both generic offerings such as digital badges as well as proprietary credential constructs such as "nanodegrees" or "MicroMasters." Given the trend in postsecondary education toward more targeted, affordable, and work-aligned offerings, great excitement has developed as millions of students and professionals have earned these non-degree credentials in just the last few years. Yet until now, little has been documented about HR leaders' experiences with and perceptions of microcredentials in hiring.

Figure 8. Level of Awareness or Experience with the Various Types of "Microcredentials" that May Appear on a Candidates' Resume



As expected, these results appear to track closely to the relative scale and longevity of each major microcredential type – many of which are proprietary and often trademarked terms.²¹ For any given type of microcredential referenced, roughly 50% or more of surveyed HR leaders report a *general awareness*. Between 25-50% have encountered certain types of microcredentials on candidates' resumes during the hiring process – and around 10-15% have hired someone who has earned a given type of microcredential.

55%

agree that microcredentials are "likely to diminish the emphasis on degrees in hiring over the next 5-10 years" Small distinctions between each microcredential category shouldn't be overemphasized due to the low overall familiarity with these offerings – but there are a few apparent distinctions. As might be expected, certificates from MOOC providers Coursera and EdX have been encountered by HR leaders most commonly, given the tens of millions of learners these firms are serving and the number of years that these microcredential offerings have in the market.²² Digital badges, which are awarded by numerous entities (including as part of degree programs) follow as the second most commonly encountered in hiring – and the most popular microcredential type in terms of general awareness.

Based on open-ended survey responses and prior research, it also appears that the term "microdegree" is seen and used by many HR leaders as a generic one, synonymous with "microcredential." Likewise, to the extent that Coursera's trademarked "MasterTrack" certificates were recently launched in early 2018, one wonders if this term might have been interpreted by respondents as a general category referring to a graduate-level (i.e., "master track") certificate.²³

These results underscore how early it still is in the development of the microcredential market and employer awareness and understanding of these offerings. The results also highlight the importance of common terms and standards, as well efforts – such as Credential Engine – to catalog, compare, and document credentials as they proliferate.²⁴ Half of respondents (53%) agree that "the proliferation of new types of educational certificates, credentials, and badges makes it harder to sort out quality."

A number of other survey questions explored these dynamics further, including testing some of the key value propositions of microcredentials compared to degrees – although it is challenging to draw major conclusions given the relatively low level of employers' experience with microcredential holders. It does appear that many employers appreciate the potential of microcredentials to be "better indicator(s) of specialized knowledge" compared to degrees.

It is particularly illustrative to explore the qualitative, open-ended responses shared by HR leaders who were familiar with microcredentials. Key themes here include the value of microcredentials as signals of continuing education beyond a degree; the targeted and skill-centric nature of microcredentials; and their relatively new nature and the potential for future growth in time.



Figure 9. Level of Awareness or Experience with the Various Types of "Microcredentials" that May Appear on a Candidates' Resume



AT THIS POINT IN TIME, our organization has little use for them since we use data to help guide our hiring system. Any data points with a small sample size and a short history cannot, by definition, be heavily weighted in this process."

MICROCREDENTIALS SHOW a candidates' commitment to continual learning and skills pivoting."

I BELIEVE THAT THESE CREDENTIALS can be helpful, but because they are so new it is hard to determine their overall value and whether they really contribute to a successful employee in the long term."

I VIEW THEM AS A BOLSTER to someone who has a Bachelor's degree. I would be willing to look at them for a candidate who doesn't have a Master's, but I would not be willing to accept them in place of a Bachelor's because they just aren't in depth enough."

I DON'T THINK MUCH OF MICROCREDENTIALS. They seem like they are no better than a certificate of learning."

I INDICATED I HAD HEARD OF A DIGITAL BADGE, but I've never hired anyone with such a certificate. I think the microcredential space will continue to influence hiring strategies going forward but it has little impact on my role today."

I FOUND THAT THE CANDIDATE with the microcredential had a more sharper focus on the job issues at hand than did the regular degreed candidates because their training had been short and intended to meet a specific goal."

IN AND OF THEMSELVES THEY CARRY LITTLE WEIGHT but added to other credentials such as continuing education, years of experience and recommendations they can push one candidate above another for consideration."

Overall, it is clear that microcredentials appear to be functioning most often as supplements to degrees rather than substitutes.

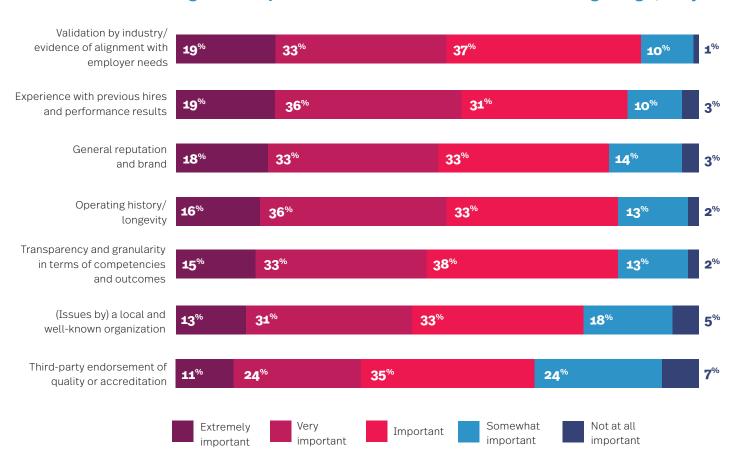
Hallmarks of Quality in a Market Driven by Non-Traditional Providers

The microcredential market has been fueled by the rise of non-institutional educational providers operating largely independent of accredited colleges and universities. Consider for example technology firms offering digital badges and Udacity and its "nanodegrees." In addition, non-profit and for-profit entities that work with university partners – such as EdX and Coursera – award their own credentials, often endorsed by the university.

What are the signals of quality in the eyes of employers? Does formal accreditation not matter when program graduates are generating business results? How big of a factor is brand? What is the role of third party endorsements or seals of approval? Many have speculated about these dynamics since "alternative" credentialing began to boom a number of years ago. These issues were part of the U.S. Department of Education's recognition during the Obama Administration that innovation in credentialing would require new approaches and quality assurance entities, as manifested in the EQUIP experimental site program and the subsequent launch of various quality assurance frameworks.²⁵

As new types of credential issuers and credentials continue to appear in the marketplace, it is useful to gauge what attributes hiring leaders associate with quality.

Figure 10. Importance of Credential Issuer Attributes in Signaling Quality



Here hiring leaders' emphasis is on industry validation and alignment, as well as experience with previous hires from a credential issuer and their performance results. At the same time it is clear that reputation and operating history/longevity are important as well. Together these are all factors that suggest that new brands can be built, much the way that many new coding bootcamps have been successful.

Perhaps most surprising in this rating of attributes – all of which are rated as "important" – is that "third-party endorsement of quality or accreditation" is rated lowest. Presumably this type of stamp of approval is a *proxy* for – or correlated with – the other attributes. Going forward, it will be important to monitor and further explore employer perspectives on the utility of formal accreditation, particularly as non-accredited offerings continue to grow, and as new quality assurance constructs emerge.

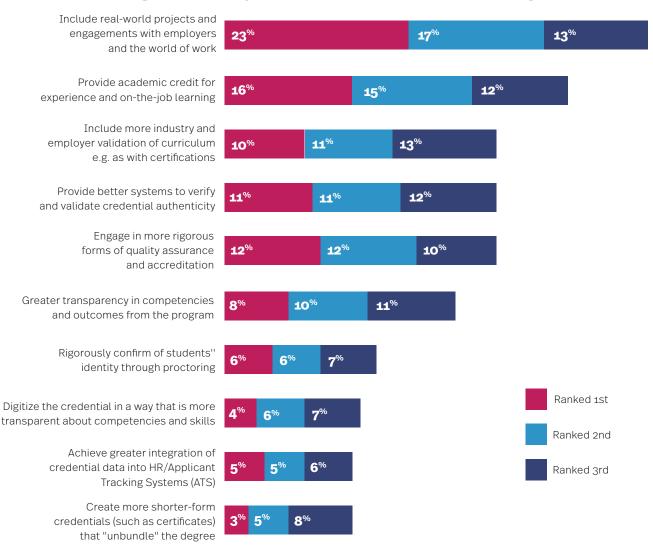


LOOKING AHEAD:

Industry-Aligned Credentials and the Future of Hiring

One of the final questions in the survey asked hiring leaders directly about priorities that they would recommend for *colleges and universities* to pursue to ensure the quality and utility of online credentials in hiring. This was a forced ranking question in which hiring leaders could rank their top 3 priorities from a list of 10 items. As the figure below illustrates, work-integrated learning and industry-validated curriculum emerge as the clear highest priorities.

Figure 11. Employers' Recommended Priorities for Colleges & Universities



This type of applied learning, employer engagement, and blurring the boundary between work and learning is an important frontier for higher education – and indeed they represent the themes that the *Center for the Future of Higher Education and Talent Strategy*'s agenda is organized around.

It is also worth noting that systems to verify and validate credential authenticity and "more rigorous" quality assurance and accreditation are relatively high on the list. When compared to the results of the earlier question about the signals of quality, this can be interpreted as suggesting that HR leaders may not fully trust the systems and signals available today – and that they agree with many in higher education who believe that important areas of work and future investment include greater rigor for quality assurance; communicating outcomes; and creating more trusted and verifiable credentials.

Innovations Challenging The Role of Traditional Degrees on the Horizon

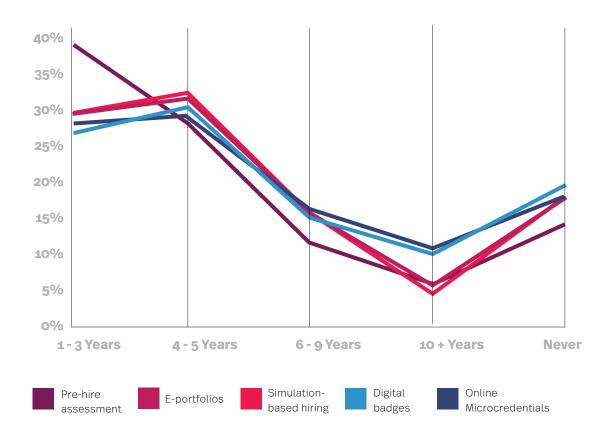
Looking ahead, HR leaders were asked to forecast the time horizon on which certain innovations in hiring and educational credentialing might pose a significant challenge to the role that degrees have in hiring – giving a sense of the relative momentum that these practices, products, and technologies have, and the threat that they might represent to higher education.

The responses to this type of forward-looking question can be interpreted directionally and relatively – and reveal that *pre-hire assessments* (such as online tests administered to candidates) appear to pose the greatest near-term challenge to the traditional reliance on educational credentials. More than one-third (39%) of respondents expect pre-hire assessment to have an impact within 1-3 years, and nearly 70% within the next 5 years.



Figure 12. Innovations Poised to Challenge the Role of Degrees in Hiring: Time Horizon

On what timeframe - if ever - do you believe that the following technologies or practices will pose a significant challenge to the value of college degrees in hiring?



Beyond pre-hire assessment, the conceptual timeframes for other categories are so tightly coupled as to be relatively indistinguishable, with perhaps the greatest skepticism or need for maturation in the digital badge and online microcredential categories. It is important to emphasize that this question was framed as exploring when hiring leaders believed these practices and technologies would pose a "significant challenge" to the reliance on degrees in hiring.

Overall, it is interesting to consider this data as evidence underscoring how early it still is in the evolution of a digital credentialing ecosystem – yet also how quickly technological developments and innovative practices may reshape hiring over the next 5 years.

Conclusion

This report has aimed to improve our understanding of how employers use and value educational credentials in a changing time for both the corporate talent strategy function as well as the postsecondary education ecosystem.

Degrees still have great value in the hiring process – but microcredentials and new hiring practices are beginning to change the equation. Given the conservative nature of the hiring and educational credentialing processes, the acceptance of innovative new products and practices is arguably occurring at more of an evolutionary pace rather than as a shift that is happening overnight.

The developments and findings discussed in this analysis present opportunities for new postsecondary education offerings, new businesses, and new policies that will deliver greater value to employers, students, and other stakeholders.

A particularly important frontier is the blurring boundary between traditional educational credentials – and learning that happens on-the-job or is embedded in the real world of work. Surveyed hiring leaders were clear that this area is greatly valued and an important direction for higher education institutions and their credentials.

Truly erasing the boundaries between learning and work – while assuring quality and reaching a greater level of scale for innovations in educational credentialing – will require more research and analysis; a deeper understanding of practices through hands-on work with employers; and new types of technologies, tools, and interfaces between employers and educational institutions. It is our hope that this study will serve as a foundational contribution in this ongoing agenda.



Survey Methodology and About the Sample

This survey of 750 U.S. hiring leaders was administered online by *Research Now SSI* in August-September 2018 to its nationally representative panel of business-to-business decision-makers. Potential respondents were first qualified as managers within the HR function, with job responsibility for hiring, recruiting, and talent strategy.

As indicated in the profile data below, respondents spanned a wide range of organizational sizes and industry sectors, and the share of responses is generally representative of the U.S. economy overall. There is a slight bias in the sample toward medium and large enterprises – for example, large enterprises with more than 500 employees comprise approximately 52% of all U.S. employment and 56% of the survey sample. The share of respondents within each industry sector is not perfectly representative, but tracks relatively closely to the sector mix of the U.S. job market at-large, with a greater share concentrated in financial, technology, healthcare/social assistance and educational services employers.

The theoretical margin of error for questions where opinion is evenly split is +/-3.6% at a 95% confidence level.

Approximate total employees in organization

Industry Sector

8%	<50	3 %	Accommodation and Food Services
11 %	50 - 99	o %	Agriculture, Forestry, Fishing, and Hunting
26%	100 - 499	1 %	Arts, Entertainment, and Recreation
16 %	500 - 999	5 %	Construction
19 %	1,000 - 4,999	9%	Educational Services
9%	5,000 - 9,999	7 %	Finance and Insurance
12 %	10,000 +	18 %	Health Care and Social Assistance
		8%	Information / Technology
		11 %	Manufacturing
		2 %	Other Services (Except Public Administration)
		9 %	Professional, Scientific, and Technical Services
		4 %	Public Administration or Government
		2 %	Real Estate and Rental and Leasing
		8%	Retail
		2 %	Transportation and Warehousing
		1 %	Utilities
		9%	Other

Job Role

Highest level of schooling completed

0%

6%

9%

11%

44%

25%

5%

32 %	Director / Department Head
31 %	Manager / Senior Manager
13 %	General Manager
9%	C-level Executive
6%	VP / Assistant VP
3 %	Partner / Principal
6%	Other

Less than high school diploma
High school diploma or GED
Some college, but no degree
Associate degree (e.g. AA, AS)
Bachelor's degree (e.g., BA, BS)
Master's degree (e.g. MA, MS, MBA)
Doctoral or professional degree
(e.g. PhD, JD, MD)



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